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THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, JULY 5, 1881.

THE PROCEEDINGS OF THE BRITISH ASSOCIATION OF GAS MANAGERS AT BIRMINGHAM.

THERE are few questions connected with the present and future of coal gas which are more debated by gas engineers, and by such of the general public as occasionally feel called upon to instruct gas men in their duties, than the capabilities of coal gas for heating purposes, and the means of extending its utility in this direction. There are few electricians even, who entertain the conviction that gas lighting will soon be a thing of the past, who do not at the same time offer to gas proprietors, otherwise disconsolate, the prospect of a modified prosperity in the heating trade, to which it is supposed they will be ultimately restricted. There is considerable danger that this possible use for gas may, through ignorance or carelessness on the part of those who speak of it, be discounted in two different ways. It may be either despised by those who do not know the capabilities of gas when used as fuel; or it may be endued with an imaginary importance by those who may err in rating the heating power of gas at too high a figure, and also in undervaluing the practical difficulties that lie in the way of its proper utilization for all the purposes to which solid fuel is applied. To prevent these unfortunate extremes there is nothing so valuable as a plain statement of facts and observations emanating from a recognized experimentalist, and therefore the communication of Mr. F. W. Hartley on the "Calorific Power of Coal Gas," read at the Birmingham meeting of the British Association of Gas Managers, is to be considered not only valuable for its matter, but also well-timed. The care and independence of mind with which Mr. Hartley addresses himself to any investigation in which he may be interested, are so well known, that his observations on this matter will carry their own weight, without any qualification that might be expressed in these columns.

In Mr. Hartley's remarks there is really little to discuss, and but little to which it is necessary to direct particular attention. It is, however, advisable to point out the bearing on some moot questions, on which there is perennial dispute, of Mr. Hartley's positive statement, confirmed by Dr. Adams, that the richer gas is known to be in illuminating power, the more valuable it is for heating purposes. The truth of this principle, when generally accepted, should go far to prevent the letting loose of so much irresponsible talk as is sometimes heard concerning the advantages of making from ordinary coal a cheap gas of low illuminating but great heating power. It must henceforth be generally accepted that, although the two effects are not strictly due to the operation of the same causes, a poor lighting gas is *primâ facie* a poor heating gas also. These considerations tend more and more to reconcile us to the continued production of what has been called "good honest sixteen-candle gas"—or, to extend the application, we would say the best average gas that can be produced from the coal most convenient to the locality—for all purposes of lighting and heating to which gas can be adapted.

Some further striking remarks of Mr. Hartley are those in which he throws doubt upon the value of many of the much-vaunted heating burners with which the market is being stocked. He finds that at best he cannot realize more than 53 per cent. of the power with which he credits the gas under examination, and that he can obtain just 98 per cent. of his practical maximum with a cluster of ordinary small fishtail burners. Hence it follows that a cheaper home-made heating burner, composed of the commonest materials, will, in good hands, serve as well as the most curiously-built arrangement that can be procured. This fact may be unfortunate for the enterprising gas-burner manufacturer and patentee, but we regard it as very favourable for the fuel; for it would be matter for regret if gas could only be burnt to advantage in costly apparatus. We need scarcely observe how grateful to Mr. Hartley gas producers and consumers would be, if he could place in their hands a simple and cheap calorimeter for testing the comparative power of different gases. It would be the next best thing to that pocket photometer for which we have been waiting so long.

Dr. Adams's paper is commendably scientific in tone; and that it corroborates Mr. Hartley's observations in very many respects is a circumstance which cannot be laid to its discredit. The author has been most assiduous in collecting data, and he handles his facts in a bold manner, with the apparent conviction that he is a prophet in the land. We do not blame Dr. Adams for his self-reliance in the solution of many doubtful points, and the tabular and other information afforded in his paper is very valuable; but whether the latter in all cases offers sufficient foundation for the former is a question that may be answered variously by different persons. Gas heating is a wide field for enterprise, and there is plenty of room therein for all who may wish to do a useful work. Dr. Adams is certainly displaying great energy in a pursuit which to him must be more or less foreign, and credit is due for the search into first principles with which he has accompanied his practical attempts to improve the use of gas in ways which need not be particularized here.

After Mr. Hartley and Dr. Adams had had an opportunity of expounding their views on one of the philosophical points of gas utilization, the members of the Association were next morning summoned by Mr. H. Woodall and Mr. W. J. Warner to look into the equally important commercial principles of gas supply. The change was a grateful one. Mr. Woodall's paper considerably overshadowed the one that followed it,

and the author had contrived to imbue it with so much combativeness that it perforce attracted attention away from the quieter remarks of Mr. Warner. We have already expressed the opinion that Mr. Woodall's paper was by far the best debateable communication brought before the meeting, and we have no reason, after this lapse of time, to alter these views. The author is a bold man; he openly attacked many popular beliefs, and especially did he fly in the face of Mr. George Livesey, by roundly condemning the principles of the sliding scale, which, in his opinion, tends to make capital dear—and this while the author of the device was beside him! In place of the sliding scale, Mr. Woodall intimated his admiration for a fixed dividend of five per cent.; and, doubtless, he had much reason for his choice. But it is not enough to criticize an established procedure; one who undertakes this duty should be prepared to recommend a better, and can Mr. Woodall indicate a more acceptable means of identifying the interests of the producer and consumer than the system which he so heartily censures? We were struck by a slight inconsequence in the very telling example by which the author proved the weight of the burden of the sliding scale on the consumer. Assuming the correctness of his little calculation, are we to understand that the Company in question would have reduced the price of gas by fourpence per thousand cubic feet if they were not to have shared in the advantages of such a course? It does not appear so. The Company, it may be, would have only paid five per cent. on their new capital, but the consumer would not have benefited thereby. The inequity of the sliding scale, as pointed out by Mr. Woodall, is diminished by every increment of new capital, and by every pound of premium—which Mr. Woodall omitted to mention—paid into the concern. The sliding scale is a human institution, and therefore not perfect; but if there is one element in the older gas politics which is more dead than another at this time, it is the principle of fixed dividends, which were admitted by the Mayor of Birmingham, on the opening day of the meeting, to have acted like a blight on the early life of gas lighting. Come what may, whether the sliding scale stand or fall, the rule of inflexible dividends is gone for ever; and for this relief we have much cause to be thankful.

Having now dealt in the very briefest possible manner with almost the only topic on which we are constrained to hold views opposite to those of Mr. Woodall, it is with special pleasure that we own to being in accord with him in his opinions on the question of capital expenditure in gas-works. The time should be over when the pretence of "making a "good job" is held to cover the waste of thousands of pounds in structures and apparatus. We have too many examples to show what the influence of extravagance in this respect is on the after-life of an undertaking, ever to forget to denounce it. It is a disgrace to the intelligent administrators of gas property throughout the country that it should be said of any engineer that to employ him means an unnecessary addition to the capital charge of so much per thousand feet of gas sold; and yet this has been alleged of more than one eminent name. Mr. Woodall, Mr. Hunt, Mr. Livesey, and others, do the cause they represent the best possible service by showing, by the logic of facts, that economy and flimsiness are no more synonymous in matters of gas-works construction than are costliness and efficiency. When men of this class are able to prove that works can be built at a certain average cost, it cannot be considered unjust to another man, whose ideas prove more costly, to call for evidence that his superfluous expenditure is warrantable.

With respect to Mr. Woodall's recommendation that increased light in public lamps should be provided by Companies charging for the extra quantity consumed after only half the rate of payment required for the former consumption, the rationality of such a course cannot be deemed beyond question. It is an ingenious way of bringing forward the advantages derivable by every consumer from an increased consumption; but it is difficult to see how the charge for public lighting could be satisfactorily split up in this manner. We agree with the spirit of "large-handed enter-"prise" as a good motive for gas administrators, but fail to see why public lighting authorities should participate in the profits of a Gas Company more than any private consumer who sets up an additional chandelier or a gas-stove. They all contribute to a common fund, from which they, in due time, receive a return proportionate to their own part in the concern, and their relation to the other customers. This simple reaction, represented by the continuous reductions in price which follow an increasing consumption, is, in our estimation, the only practicable method of manifesting the interdependence of gas producers and consumers. Any special favour extended to local authorities, over and above the limits marked out by Mr. G. Livesey, is nothing more than a bribe for a quiet life, or a veiled advertisement, and as such it should be regarded. The discussion on Mr. Woodall's paper well brought out its many-sidedness, and the multiplicity of ideas which spring from a careful re-perusal of this most instructive debate bears witness to the great service which members of the gas profession may do to each other and to the public by joining in the elucidation of the principles of high policy so skilfully passed in review by the author.

GAS BILLS IN THE HOUSE OF LORDS—THE SOUTH METROPOLITAN AND BRIGHTON AND HOVE BILLS.

The Committee of the House of Lords to whom has been referred the South Metropolitan Gas Bill, commence their labours in connection with that Bill to-day, and will subsequently proceed with the consideration of the Brighton and Hove Gas Bill, which has been completely transformed since we last had occasion to mention it. When it left the Lower House it was a simple amalgamating Bill for the three Brighton Gas Companies, and the terms of the arrangement were to have been submitted to the Board of Trade, no details on the subject being contained in the Bill. Now all reference to the Board of Trade is struck out, and twenty-five new clauses are introduced, setting forth the terms of the proposed amalgamation. The capital of the amalgamated Company is to be £495,000, and it is proposed to allow the £20 shares in the Old Company to be paid up in full, where this has not been done, or the amalgamated Company may require the shares to be so paid up. The present Board of Directors is to be increased to eight, to be subsequently reduced to seven, and, at the discretion of the Company, to five; with provision for the present Manager becoming a Director. Certain arrangements as to compensation are also included in the Bill, which is likely to be opposed in its amended form, principally on the ground of insufficient reduction in the price of gas to certain outlying districts, where the rates were raised in consequence of the coal famine of 1873. This is not a matter that can directly affect the Brighton Corporation, who will probably keep up a mild opposition to the Bill; but the subject of most general interest in connection with the measure as it now stands is the precedent established for the inclusion of precise terms of amalgamation in a Bill as submitted to Parliament, instead of leaving them to the supervision of the Board of Trade. The change is of less consequence in this particular instance, since there is only one process of amalgamation contemplated—there is no roving amalgamating charter asked for, as first obtained by the leading Metropolitan Company. In other cases it might possibly be a grave prejudice to schemes of this nature if they were required to be set forth in detail in a Bill. The principle of amalgamation is, however, of such restricted application that every recurring case will probably continue to be treated on its merits; and rightly so, for no general rules can be laid down for such arrangements.

THE GAS SUPPLY OF PLYMOUTH.

That gas should be sold at Plymouth cheaper than by any other Company in the Kingdom, is at first sight unaccountable; but it is nevertheless a fact. At the annual general meeting of the Plymouth and Stonehouse Gaslight and Coke Company on Thursday last, it was announced that the price of gas throughout the district would be reduced at Michaelmas next to 2s. per thousand cubic feet, the present price being 2s. 1d. When the Company obtained their new Act in 1879, which brought them under the sliding scale, the price of gas stood at 2s. 3d. per thousand cubic feet, so that the reductions made since that time cannot be considered unnatural. As might have been expected, the policy of reducing the price has resulted in strengthening and increasing the Company's business, their revenue for the past year having been £52,363, or an excess of £3432 over that of 1879, when the new era commenced. Dividends at the rate of eleven and a quarter per cent. on the original shares and eight and three-quarters per cent. on the additional share capital were declared, and in reference to the general position of the Company it may be remarked that the Chairman, Mr. George Henderson, stated that the minimum price of gas had now been reached, and that the policy of the Board henceforth would be to build up the reserve fund. This fund now stands at rather over £10,000, part of which we observe is invested in The Gaslight and Coke Company's debentures. While there can be no objection, in ordinary times, to one Gas Company putting money into the debenture securities of another Gas Company, it is a practice which appears somewhat impolitic,

and should not be too freely indulged in. In saying this we try to look at the matter from the point of view of the general public, who might, in time of panic, hold that in a universal wreck of gas property the reserve so placed might disappear with the rest. In all this, of course, we do not desire to question the soundness of the management of the Plymouth Gas Company, who have at this moment attained a position which may well be envied by many other Companies originally started under more favourable auspices, but now labouring under disadvantages which the far south-western undertaking has contrived to avoid or overcome.

ELECTRIC LIGHTING IN WESTMINSTER AND AT HULL.

THERE are not wanting signs to show that the progress of electric lighting is not altogether characterized by "leaps and "bounds," as was lately the case. We do not care to dwell particularly on the matter; but just now, when the unsatisfactory result of the several experiments to light the House of Commons by a combination of large and small electric lamps has caused the postponement of further attempts in the same direction until the recess—when, in fact, there will be nobody to express discontent with the noise and flicker of the lights—we may be permitted to remark that the beginning of the trial of any system of electric lighting is commonly blazoned far and wide, while its eventual discontinuance in any case is always hushed up. It would be interesting to learn the number of experimental trials of different systems of electric arc-lighting—to say nothing of the less known incandescent lights—which have resulted in a return to gas, after a longer or shorter period of troubled and fitful glare from the carbons. And if to these could be added a return of the establishments where it is maintained in the interest of the supplying Companies, or as a kind of advertisement, rather than for its utility, the information would be surprising to those whose notions of the success of the new idea are principally taken from the successive glorifying announcements in the daily press of the commencement of new trials in sundry places. At Hull, where the popular fervour led the Local Authorities to obtain a special Act permitting them to undertake electric lighting, the excitement has so far cooled down that a motion to obtain tenders from some of the best known practical electricians for lighting the streets and town hall could neither be carried in the Special Committee constituted to apply the powers of the Act, nor subsequently in the Council. The objection to the proposal lay in the sensible contention that, as the City of London experiments are not yet concluded, there can be no reason why the money of the ratepayers of Hull should be spent to find out for themselves what, by waiting a short time, they may learn from London for nothing. This consideration, coupled with the excessive cost of the proposed trial, has outweighed the sentimental idea that, having the Act, it ought to be put in operation. When the adversaries of gas lighting are reduced to such shallow arguments as the last—which is really all that the prime movers of the Hull agitation could fall back upon—their case is indeed unhopeful.

THE PROGRESS OF JOINT-STOCK TRADING.

THERE has of late been an indubitable recovery of confidence in the principle of joint-stock trading. The revival has been of a partial nature, and has manifested itself most actively in the transfer of established private businesses to public Companies. Many arrangements of this kind have recently been concluded, and we may be sure that the movement will extend until it dies out naturally, or meets with some sudden check. Among other projects, and ranking with the soundest, are to be found three ventures which many people connected with the gas industry will regard with special interest. These are the conversion of the firm of Crossley Bros. into a Limited Company; the formation of the General Gas Heating and Lighting Apparatus Company, Limited, on the basis of the business of Mr. S. Leoni; and the expansion of Mr. W. Sugg's business into a joint-stock concern. Operations such as these can hardly be called speculative, and there can be no doubt as to the good to the cause of gas lighting reform and progress that may flow from the indefinite widening of three such well-known enterprises as those we have named, connected respectively with the utilization of gas as a motive power, the development of gas cooking and heating, and the improvement of gas lighting. There is plenty of scope for each of these concerns in the paths marked out by the original founders, who, with their immediate successors, must be credited with no small amount of perspicacity and steadiness in selecting and prosecuting with so much success the branches of commercial enterprise with which their names are so closely identified.

Water and Sanitary Affairs.

MR. BRIGHT wishes it to be understood that he has not yet indicated "the manner of the reforms which he would recom-"mend" in respect to the local affairs of the Metropolis. But he expressly declares that "the objections to one great Cor-"poration are serious," and goes on to say "it is probable "that separate municipal governments for the different "boroughs might be most convenient and satisfactory." This introduces us to the Ten Towns theory of Mr. M'Cullagh Torrens, while *The Times* a few days back suggested a method like that proposed by Earl Fortescue, being a distinct board for each function. Either of these systems is obnoxious to that perfect unity which was once the aspiration of Metropolitan reformers. London, it would seem, cannot be treated as one homogeneous city. If there be this difficulty in the way, it cannot fail to have its influence on the settlement of the Water Question. One advantage of the controversy going forward in reference to the government of London is that the inhabitants of the Metropolis are becoming better acquainted with the elements of the existing system. The Vestries are no longer unknown, and their importance is more clearly apprehended. A reasonable re-adjustment of the existing machinery might be of great service; but whether it is desirable to revolutionize the government of the Metropolis is a point on which we think will be found a considerable want of agreement, both among statesmen and the people of London generally. There is nothing very grand, imposing, or imperial about the present system; but there are some tolerably good results accruing from it. London is clearly an improving city, and as it is a healthy one, we may presume that the Local Authorities perform an appreciable amount of good sanitary work.

A large increase in the number of "supplies" in the district of the East London Water-Works Company is shown in Lieut.-Col. Bolton's last monthly report. The new supplies for the month, in the case of this Company, are as many as 594. In addition, the Southwark and Vauxhall Company show an increase of 421, and the West Middlesex 324. The total of all the Companies for the month is 2110. In the month preceding there was an increase of 1960. But, on the other hand, we presume there is some loss, and it would be well if this could be shown simultaneously with the gain, as in the case of the Chelsea Company, who report 74 supplies laid on during the month; but make a deduction for 13 houses pulled down. These statistics, if given with precision, would be interesting, as showing better than anything else the extension of house building, and the development of manufacturing industry.

The Hastings Corporation, who are the proprietors of the borough water-works, have arrived at the determination to prohibit underground cisterns, of which it is said there are several in the borough. The right of the Corporation to interdict these receptacles has been challenged; but "the "powers that be" have asserted their authority in such cases by cutting off the supply. One of the leading medical men of the town, Dr. Greenhill—widely known for his efforts to improve the dwellings of the working classes—has been one of the parties thus treated, and he has endeavoured to gain what he conceives to be his rights by summoning the Corporation before the County Court Judge. The latter has decided that he has no jurisdiction in the matter, but appears rather to wish that he had, saying "it would "take a great deal of argument to make him believe "the cistern was improper, if it were pure and not "leaky, after having been considered fit for twenty "years." His Honour further remarked that he should require something more "than the mere fact that it was "underground," to convince him that the cistern was to be condemned. It was intimated that Dr. Greenhill should make his complaint to the Borough Justices, the County Court Judge, in suggesting this course, saying "he trusted "that the Justices would do their duty as Magistrates apart "from their connection with the Corporation." The result of the present proceedings was that the Judge struck out the case without any order as to costs. The Counsel for the Corporation applied for costs, but was told that it was not usual. Considerable comment is made on the fact that the Corporation, in prohibiting underground cisterns, have neither statute nor bye-law to support such a specific prohibition. It is therefore argued that by their procedure the Corporation are assuming legislative functions. If they could prove a cistern to be leaky or unclean, they would have the law on their side, but they have attempted a course essentially different from this. A local paper, in comment-

ing on the judgment delivered in the case, observes: "His "Honour could not see, any more than we can see, what "right the Sanitary Authority has to condemn a sound cistern "merely because it is underground." "Wise supervision," it is justly submitted, "should be distinguished from vexatious "meddling."

It is to be hoped that the inquiry into the etiology of summer diarrhœa, to be conducted by Dr. Ballard at the instance of the Local Government Board, will lead to some clear and practical conclusions. It has been the fashion in London to lay the blame of this disease at the door of the Water Companies. The fallacy of such an explanation is shown by the circumstance that the mortality prevails to a great extent among infants who are dependent on milk for their sustenance. Last week there were 44 deaths from diarrhœa in the Metropolis, and of these we are told in the Registrar-General's report "no less than thirty-"seven were of infants under one year of age." Dr. Ballard has a difficult task before him. He has to be careful that he includes all the phenomena which are likely to be connected with the disease, and yet he has to be on his guard lest he becomes so overloaded with details as to be involved in endless delay and perplexity. One of the medical journals proposes "among the points of inquiry" a maze of particulars which we hope may be considered superfluous, otherwise it is difficult to say where or when the forthcoming inquiry will end.

The Dublin Corporation have received a communication from the Irish Local Government Board, containing the report of Mr. C. P. Cotton, the Inspector who conducted the recent inquiry as to the manner in which the new sewer contract had been executed, together with the decision of the Board thereon. Mr. Cotton reports that in his opinion some of the complaints in respect to the new sewer works are substantiated, while others are not. It was alleged in the course of the inquiry that there was a conspiracy, in which the complainants were engaged, to have bad work designedly done, which no care on the part of the contractor or of the engineers could counteract. Mr. Cotton says that no such conspiracy was shown to have existed, and he was of opinion that no faulty work was produced in such a way. But he goes on to observe: "That these "complaints were preferred as an organized attack on the "contractor is patent; the *animus* which characterized the "evidence was most marked." Concerning the position of the Municipal Council in this matter, the Government Inspector is of opinion that the superintending staff was not sufficiently strong. Finally, Mr. Cotton says: "I do not "consider that the defects proved on this inquiry afford "grounds for withholding a further instalment of the loan; "but I recommend that before it is granted the detailed "examination, which was intended to be made before the "final certificate, be now made as regards all the works now "completed, and the result submitted for your considera-"tion." The Local Government Board say they "concur "in the views expressed by their Inspector," and they express their satisfaction at learning that the Municipal Council strengthened the supervising staff after the complaints were made. Thus the charges brought against the contractor have resulted in bringing the Corporation to book—a result which the Council deprecated as soon as they saw it threatening them. It is satisfactory to find that, despite all the outcry, there has been nothing very seriously wrong. Mr. Cotton—like Mr. Bell, who was employed in the first instance by the Corporation to go over the works—considers that the complaints made as to the quality of the materials used were without foundation, the evidence generally being "strongly in favour of the good quality of the "materials employed by the contractor." If the contractor really intended to wrong the Corporation and the ratepayers, he certainly would have gone to work in a different way, and it is sufficiently clear that if he had been an Irishman instead of a Scotchman, the present defects would never have been brought to the notice of the Imperial Authorities.

An Improved Gas Cooking-Stove.—We are promised particulars in the course of a few weeks in regard to a gas cooking-stove (the invention of a gentleman closely connected with a provincial gas company), which bids fair to effect great economy in the amount of gas used for a given purpose—the saving so far shown being at least 25 per cent. over any stove submitted to trial in competition with it. In a recent trial against one of the best jacketed cookers in the market, a given roasting operation was carried out with a saving of 35 feet of gas and 10 minutes of time. The stove in question, we understand, can be made and sold at a price which will compare favourably with any now before the public. Directly the final tests have been completed we shall publish the results.

THE NEW GAS-FITTINGS COMPANY.

As briefly noticed in our editorial columns, a Limited Liability Company has been formed for the purpose of carrying on in a larger and more general style the business founded and brought to considerable eminence by Mr. S. Leoni, of 74, Strand, and St. Paul's Street, New North Road, London. The General Gas Heating and Lighting Apparatus Company, Limited, whose prospectus appears in our advertising columns to-day, will, if the intentions of the promoters are crowned with success, supply a positive want in the industrial arrangements of the Metropolis, and also help materially in furthering the extended utilization of gas throughout a wider connection. The names of the Directors are a sufficient guarantee of the spirit in which the new venture is started, and the published particulars of the scheme are simplicity itself. The objects of the Company, as stated in the Memorandum of Association, are to prosecute the trade of gas, hot water, and general engineers, and designers of and dealers in stoves, ranges, and kitcheners of every description, including all kinds of articles used in the business. It is also proposed, in connection with the original gas and water fitting trade, which will be carried on as before in London, to establish scattered depôts and agencies in town and country, where apparatus can be seen in operation, and arrangements made for the proper erection and fitting of the same by competent workmen. It will thus be seen that a large and high-class trade in gas-fittings for heating, cooking, and lighting is in contemplation by the thoroughly practical Board of Directors who have undertaken to give the concern its start in life; and while there is good reason for believing that any general business of this nature, worked under such auspices, would have a fair chance of success, the venture is fortunate in commencing with the already-formed connection belonging to Mr. Leoni, than whom no one has done more to make gas-cooking a successful process. In London especially, the hap-hazard way in which the gas-fittings inside consumers' premises have been put up is in many instances alarming, and it is surprising that more discredit has not thereby been brought on the gas which has been burnt by means of such fearful and wonderful arrangements. London is more than a town—it is, in fact, a considerable "province of houses"—and it will not be surprising if many years should elapse before the influence of almost any number of gas-fitting reformers makes itself felt. The present is, however, a most favourable time for such an undertaking. The advantages of gas-cooking as a powerful help in preventing the formation of the dense clouds of smoke which arise from the domestic fires of our large cities, have recently been forced on the public attention, and by none more successfully than by one of the Directors of the new Company. Add to this the fact that the ease, economy, and cleanliness of gas in the kitchen are becoming more widely recognized, and it will be seen that there is every chance of a great impetus in the direction to which the promoters of the new enterprise are looking. It should be remarked that, although the capital of the Company is £50,000, the various leases, plant, machinery, &c., of the business of Mr. Leoni are to be taken over at the price of £9200, and £13,240 more will be paid for the stock-in-trade, of which £8000 will be in shares bearing dividend contingent upon the ordinary capital receiving at least 6 per cent. interest, and the balance payable in five yearly instalments or in deferred shares. There will not be any promotion-money paid, and the establishment of the Company will be conducted without unnecessary outlay of any kind, the wish of the Directors being to get into operation in the shortest and quietest possible way. As we have already said, there is plenty of room and a fair opportunity for the Company; and there is no reason why what has been done elsewhere, especially in Liverpool—where it has been abundantly proved that gas-fitting on a large scale can be made to pay extremely well—should not be equalled, if not surpassed by a London organization having even better claims for support.

WILLIAM SUGG AND COMPANY, LIMITED.

Of a somewhat different, yet in many respects similar nature to that just noticed, is the Company proposed to be formed on the basis of the business now carried on by Mr. William Sugg, at Westminster, Charing Cross, and Paris, and whose prospectus also appears elsewhere to-day. The differences between them are very obvious, being found in the details of the respective projects; while their similarity is mainly in respect of principle. They both aim at extending the utilization of gas, and removing existing disabilities and prejudices against its general adoption; and, therefore, we welcome them, and are disposed to wish impartially for their success. There is no possibility of the two undertakings interfering with each other. The concerns directed by Mr. Sugg and Mr. Leoni respectively have hitherto found ample room to exist and grow side by side, and there is small likelihood of any great change in their relative positions. Mr. Sugg's business has lately increased with uninterrupted vitality, until it has almost exceeded his unassisted powers of control; and with the latest developments of high-power gas lighting, and other new departures in the use of gas with which his name is connected, the difficulty of prosecuting the undertaking to full advantage threatens to become more pressing than before. It would be matter for regret if the work with which Mr. Sugg's name is identified should suffer disparagement for the want of extended facilities in carrying on the trade; and, consequently, the success of the proposed reorganization of the concern, on a wider footing, is matter of general interest. The constitution of the directorate of the Company shows the manner in which the venture is regarded by men who are publicly known in connection with the manufacture of gas; and, as in the former case, this circumstance is of good augury for the reconciliation of the two branches of the

gas producer's work, one of which has been too generally abandoned to take its chance. The capital of the Company is £150,000, and the amount to be paid to the vendor for the business, as a going concern, is £40,000, besides a half share for the term of 21 years of all profits over 7 per cent. The valuation of the profits and of the property employed in the business has been made by Mr. Alfred Lass and Mr. R. P. Spice, and in face of these data the arrangement above referred to appears strictly reasonable. There can be no doubt of the capabilities of Mr. Sugg's work for great extension under favourable conditions, and these will be thoroughly provided by the arrangements of the Company. Mr. Sugg will be Managing Director; and with his naturally inventive mind relieved of cares which can, with advantage, be undertaken by others, may be expected to surpass even himself in the exploration of fresh fields of enterprise. The business which will be undertaken by the Company in many respects stands alone, and is now almost of too much importance to the progress of gas lighting to be left in single hands. There is, however, small risk that the projected arrangement will not be consummated; or that, being fairly established, it will not be eminently successful from a commercial point of view.

Notes.

Lamplighting Extraordinary.

Street lamplighting upon a new principle is being tried in a part of New York, and, according to the *New York Herald*, with complete success. The lamps in question are not supplied with gas, but with a fluid undescribed, save that it is stated to be a mixture of petroleum and naphtha. This peculiar liquid is said to give a soft, steady, and white light of about 15-candle power; while the gas-lamps, which are also said to give a dull, flickering, reddish light, are credited with only 9-candle power. The cost of the oil lamps is also stated to be only about one-third that of gas. During the day the lamp-flame is not extinguished, but is merely turned down very low, whereby the consumption of spirit is said to be reduced to such an extent that the expense of keeping a lamp going by day for a fortnight is not more than one cent! There is nothing said about cleaning and trimming these lamps, but the supply of fluid is provided by driving round a waggon from which the liquid is pumped up to the reservoir of every lamp. The pillars are of the usual height and distance apart, and it is the way in which the lamps are turned up at nightfall which forms the greatest claim to originality of the entire arrangement. The lamplighter is mounted on a fleet horse, and, being provided with a rod, he keeps his steed galloping between the pillars, and when opposite one of them the docile animal suddenly stops, so as to allow his rider to manipulate a lever handle attached to the lamp, and the flame being thus turned up or down as required, the lamplighter again "urges on his wild career." How the other passengers along the scene of this daring act of horsemanship like to have the lamplighter charging across the roadway at intervals of 85 feet, or how the rider himself manages if a carriage happens to obstruct his way, are not told us by the newspaper reporter, who followed the man in a gig at a sharp trot. The style of lamplighting in question—to say nothing of the lamps themselves—certainly appears more suitable for a scattered outlying district than for even a moderately busy thoroughfare.

Measures for the Prevention of Fire in Theatres.

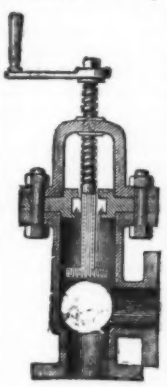
Since the burning of the theatre at Nice, new and stringent regulations, aiming at the suppression of all danger of fire in places of public amusement, have been issued from the prefectures of police of many Continental towns. In Paris a Commission was appointed by the Prefect shortly after this occurrence, and, as a result of the recent report of this Commission, an order is about to be issued to the managers of all the Paris theatres for the adoption of certain measures calculated to lessen the probabilities of fire, to assure the presence of prompt aid in case of an outbreak, and to facilitate the emptying of the buildings in the shortest possible time. The preventive measures comprise stipulations concerning the situation and construction of the building itself, and also the means of lighting, decorations, &c. With reference to the lighting, it is remarked in the report that to this is due the greater part of the fires to which all theatres have been so conspicuously liable. Therefore the gas-fittings for lighting the passages and lobbies, the auditorium, and the stage, are subjected to precise regulations. It is to be recollected that at Nice the gas was suddenly extinguished; and had it not been for the darkness thus caused, and which terrified the spectators, a number of the victims might have escaped. To avoid this great inconvenience, the Prefect's regulations prescribe that henceforth, during every performance in all parts of the building accessible to the public, there shall be maintained alight a sufficient number of oil lamps to enable the public, on an emergency, to find a way through the various exit passages. Besides this, the auditorium, stage, and passages are to be supplied with gas through separate services and meters, so that the sudden extinction of the lights in all parts of the building shall be rendered improbable. All service and internal gas-pipes are ordered to be of iron barrel, to the entire exclusion of lead and composition. The footlights are to burn with flames directed downwards into a suitable flue, and, like all other lights fixed near the floor, are to be protected with wire netting. Various other directions respecting water supply, &c., are set forth in detail in the order, as printed in the *Temps*, including a regulation to the effect that the conducting wires of electric lamps are to be insulated with an uninflammable substance, because accidental rupture of, or damage to these wires might result in a local development of heat sufficient to fire a light and inflammable body, and so form the commencement of a conflagration.

Another Electic Light for Domestic Use.

Yet another Richmond has entered on the field of action wherein so many forms of electric lamps dispute the claims of gas as being the best known means of domestic lighting. This time it is a Dr. Paget Higgs, who is described as being an English electrician resident in New York, who is to succeed where others have failed. This gentleman is stated, on the authority of the *New York Times*, to have addressed himself to the task of perfecting the electric light on the small scale, without attempting to copy Mr. Edison or anybody else. The new process embraces the supply of the necessary current as well as the design of the lamp. Dr. Higgs considers the necessity, inseparable from the use of systems of incandescent lighting, for the possession by the consumer of a private brook, like Sir William Armstrong's, or at least the establishment of an engine and electric generator, as being the greatest obstacle to the general introduction of electric lighting into private houses. He therefore proposes to supply the power by portable reservoirs *à la* Faure; but, of course, without the inconveniences and faults of the French storeage batteries. Dr. Higgs's reservoirs are small, of the power of 3·1 volts each, which discharge their load with great regularity—presumably in succession. How these cells are to be charged and distributed, so as to avoid some of the greatest disadvantages of the Faure electrical-porterage system, are not mentioned. With regard to the lamp devised by Dr. Higgs, we are informed that it is constructed on what its inventor calls the principle of the infinitesimal arc—that is, the carbons are separated by a distance almost too small to be appreciated by the eye, so as to obtain a brilliant light of small size with the least possible amount of resistance. In this manner a lamp giving a light equal to that of 40 candles is said to be produced from secondary cells equal in energy to seven or eight ordinary Bunsen pint elements. We are not informed how the "infinitesimal arc" is maintained, although it is generally known that the arrangements for keeping the carbons their proper distance apart are the most vital portions of every arc-lamp. We are, however, bidden to believe that by some happy method Dr. Higgs succeeds in obtaining the light of 750 candles per horse power, with lamps of only 40 candles; while Edison confesses his inability to procure more than 100 candles per horse power in his 16-candle incandescent lamps. Also we are told that henceforth when a householder requires electric lamps he will merely be required to purchase, at a slight outlay, the necessary lamps and storeage cells, which latter, when exhausted, can be sent to the nearest generator station to be refilled, like an empty petroleum can at a convenient oil-shop, and at even less expense.

Cochrane's Patent Acid Valve.

The construction and action of this valve—which bids fair to remove a difficulty that has long been felt by all makers or users of acids, alkalies, ammoniacal liquor, &c.—will be readily seen from the accompanying illustration. It consists of a lead box and cover flange, and specially prepared india-rubber ball-valve. The stalk is made of brass or steel, working through a cast-iron gland; and the lower half coated with lead, so that the whole of the inside parts are either lead or rubber. As will be seen from the illustration, the lead cover flange is recessed, and a hydraulic cup rubber inserted, so that the valve may, if required, be used up to a considerable pressure. The construction of the valve is very simple, and will allow its wearing parts to be replaced from time to time without removing its connections. Another great advantage claimed for it is its non-liability to get choked by straw, grit, &c. It is now in use at the works of several of the largest alkali firms—amongst others Messrs. Chance Bros., who within the past few days have reported most favourably as to its working.



Further Improvements in the Street Lighting of London.—We hear that Messrs. G. Bray and Co., of Leeds, are about to light Piccadilly with their patent street lanterns. Nearly 200 of these lanterns have been purchased by the several Lighting Authorities of London, and are in use principally at the crossings of roads.

The Extended Use of Gas-Engines.—As an instance of the rapid advance in the use of gas for motive power, we may mention that Messrs. Crossley Brothers, Limited, sold during last month, for London alone, 50 of their "Otto" silent gas-engines, and most of them over 3½-horse power. There are now about 600 of their engines in use in London and the suburbs; and it is estimated that these are consuming nearly £15,000 worth of gas per annum. As much of this quantity is furnished during the daytime, at comparatively low pressure, such a supply is of considerable advantage to the Companies; and when in 10 years' time, at the present rate of progress, the figure reaches probably £100,000, the supply will have become of such proportions as to render it possible that arrangements may be made for the gas consumed in engines to be charged for at a lower rate than for private illuminating purposes.

Death of Mr. R. Hart, of Folkestone.—The death is announced of Mr. Richard Hart, a solicitor at Folkestone, and long connected with the local Gas Company. Mr. Hart, who was 78 years of age, died on Monday last week, the 27th ult.

Communicated Article.

HOT CONDENSATION AND THE ST. JOHN APPARATUS.

By "Owen Merriman."

The paper read by Mr. Spice at the Birmingham meeting of the British Association of Gas Managers, on the working of the St. John apparatus, recalls attention to a subject which has formed a fruitful topic of debate at most meetings of gas managers within recent years. The process of hot condensation, or slow cooling—for the two terms represent methods often identical, and, where differing in detail, have the same ends in view—was fully explained by the Rev. W. R. Bowditch in his book published in 1867. It is, however, only within the last few years that the matter has received the attention it merits; and at the present day it is frequently imperfectly understood and applied. Briefly stated, the process consists in separating the tar from the gas while still hot, and as soon as practicable after it leaves the retort; and very gradually reducing the temperature of the gas, from the point at which it is evolved from the coal to a temperature approximating to that of the atmosphere. But, while its main features are so simply defined, the *rationale* of its action is not so easily explained; nor is its successful application unattended with difficulties.

The crude gas, as it issues from the retort, contains the vapours of a great variety of the hydrocarbon constituents of tar—substances some of which are gaseous at low temperatures, while others have a boiling point of upwards of 400° Fahr. These substances have a peculiar affinity for each other, by reason of which the vapours of the light hydrocarbons—those of low boiling points—have the property of carrying in solution a proportion of the vapours of the heavier compounds, even at temperatures far below the point at which the latter, if alone, would become liquid; while these heavy hydrocarbons, when condensed into the liquid state, are capable of dissolving out of the gas those lighter vapours which, under other conditions, would be permanently retained and distributed with it. The capacity of the light vapours for holding the heavy ones in solution increases with an increase of temperature; while the power of the heavy substances to dissolve the lighter increases with a decrease of temperature. Our object, then, should obviously be to remove the bulk of the heavy hydrocarbons before they have had opportunity to injuriously affect the gas; and so to condense the remainder that the gas may be enabled to retain a maximum amount of the heavy vapours with the loss of a minimum amount of the lighter ones. By removing all the liquefied tar from the gas immediately after leaving the ascension-pipe, the former part of this requirement is fulfilled; and so much of the process of hot condensation is often successfully carried out. But the other half of the process is not, in general, so satisfactorily effected. As usually practised, the gas, after having the tar abstracted, is carried through a long length of pipe, gradually descending until it reaches its lowest point, where it enters the ordinary condensers. As a consequence, any particles of tar which may condense from the gas must proceed with it the whole length of pipe, the slowly cooling gas continually in contact with an ever-increasing amount of tar, which latter is each moment becoming more potent for abstracting the light-giving vapours from the gas, until the culmination is reached at the entrance to the condensers. A more effectual means could hardly be devised for robbing the gas of its illuminating power.

A better method, and one more in accordance with scientific principles, would be to conduct the gas and tar together direct from the ascension-pipe to a receptacle on the ground level—which, for convenience, I will call the tar-box—from which the tar might be led away as deposited. The pipes to the tar-box should be jacketed, and the latter kept at a temperature of, say, 160° Fahr. by means of exhaust steam. From this point the gas should be conducted through the long length of pipe previously mentioned, but in this case ascending from the tar-box until its highest level is reached just before entering the condensers. For this purpose it might, if necessary, have an abrupt descent. By such an arrangement any tar which might condense from the gas would fall back into the tar-box, where it would be re-distilled, giving up its lighter portions to the gas; which latter only comes in contact with tar at a temperature at which it can have no deleterious effect.

The advantages which may be confidently expected to result from an intelligent application of the principles set forth are—an improved illuminating power of gas, at a cheaper cost of production; and a reduction of the liability to deposit naphthaline. The first is attained by enabling the gas to carry more of the heavy hydrocarbons (for it must be remembered that the illuminating power of gas is due to the small amount of these heavy vapours it contains, rather than to the perhaps larger proportion of lighter compounds); while the second is to be attributed partly to the naphthaline dissolved by the hot tar, and partly to the increased capacity of the gas for holding it in solution.

These results, it will be remembered, are exactly what are claimed for the St. John apparatus; and, in my opinion, are so far attained by it as that apparatus imperfectly fulfils the conditions I have laid down. Seeing, then, that the partial accomplishment of the process hot condensation has been so successful, it is not without encouragement that we may look for a wider measure of success when the condensation of gas shall be carried out in a manner thoroughly grounded upon scientific principles.

Eighty of the public lamps at Sheffield are, it is reported, now being lit and extinguished by a pneumatic system invented by Mr. George Weston. The operation of lighting or putting out is done in less than 15 seconds. It is expected that the experiment will answer.

Correspondence.

THE ST. JOHN GAS APPARATUS

Sir,—Referring to your leading article in the Journal of the 28th of last month, I would inquire whether the primary object of the gas manufacturer is to make good gas or rich tar? In my simplicity, I have always thought that the principal desideratum of engineers and managers of gas-works has been to get as much good gas out of a ton of coal as they could, and at as little cost as possible.

I take it that this may be accepted, by common-sense men, as an axiom; and I say that, in these modern times, it is more than ever desirable that this rule should be the "pole-star" of the retort-house, when we have to grapple with the contrivances of scientists of the most advanced order, who, as our rivals, are seeking—and making a boast of their object and aims—*to supersede the use of gas by electric lighting.*

Your remarks gave me pain, not on my account, but as indicating, on your part, sympathy with those who have a pronounced taste for *rich tar* in preference to economically produced good gas; and that this sympathy should lead you to throw cold water and suspicion on my honest and earnest effort to direct attention to a simple method of effecting great economy in the use of an expensive kind of raw material, and the substitution of a commoner and cheaper kind, for the production of 18-candle gas.

As soon as I can, I purpose returning to the subject in your pages, if you will permit me, and will deal with the *pros* and *cons* of the subject.

21, *Parliament Street, S.W., July* 2, 1881. R. P. Spice.

[We shall be very pleased to allow Mr. Spice an opportunity of amplifying his testimony respecting the principles on which the St. John apparatus is constructed. We are at a loss to find how our correspondent has arrived at the conclusion that we are in favour of rich tar and poor gas; not one of our remarks last week bearing out such an interpretation. We simply meant to say that Mr. Spice had not proved his case; and shall heartily rejoice if, in his promised communication, he can bring forward conclusive evidence of the superiority of the apparatus in question.—Ed. J. G. L.]

ECONOMY IN CARBONIZATION.

Sir,—Referring to the question raised by Mr. Livesey some eight months ago, respecting the relative economy of high and low heats, I have since noticed certain facts in connection with the subject, which seem to bear out Mr. Livesey's views. In making some trials with high heats, I met with the nuisance of stopped pipes, and, on examining the deposits, found, both in those occurring in the ascension-pipes and in the thick pitchy deposits in the bridge-pipes, a large amount of free carbon; and I have since found in the tar deposited at a distance from the hydraulic main, free carbon in considerable quantity. This carbon could only be produced by the decomposition of olefiant gas, propylene, acetylene, and perhaps other heavy hydrocarbons, when subjected to high temperatures; the other products being either hydrocarbons of less value as illuminants than the primary gases, or free hydrogen. In some cases these gaseous resultants are of greater volume than the original gas, and this accounts—though only to a certain extent—for the increased yield which is obtainable by the use of high heats.

We have one form of this reaction exhibited in the deposition of carbon in cases where retorts are worked under pressure; and although carbon incrustations have become less common since the adoption of improved exhausting appliances, I have reason to believe that with high heats, however complete may be the arrangements for removing the gases from the retorts as soon as generated, a certain amount of carbon will be set free and lost as an illuminant. It remains, therefore, to be seen whether this loss of the lighting constituent may be so minimized that the increased volume of gas may be regarded as a real and substantial gain.

Northwich, June 27, 1881. B. Askew.

FIELD'S ANALYSIS OF THE METROPOLITAN GAS COMPANIES' ACCOUNTS.

Sir,—In your notice of "Field's Analysis for 1880," this week, you state that the South Metropolitan Company carries the lightest charge for capital of all the Metropolitan Companies, with £5 0s. 10d. per ton. Let me draw your attention to the fact that you have overlooked the Commercial Company, which carries only £4 19s. 9d. per ton.

Commercial Gas Company, June 29, 1881. H. D. Ellis.

[We have to thank our correspondent for pointing out this unintentional oversight in our notice of Mr. Field's useful work. At the same time we may note (at the request of Mr. Field) that there are a few, for the most part trifling errors,* which were detected in the first copies printed, and corrected in subsequent issues.—Ed. J. G. L.]

The Quality of the Leeds Gas.—In our issue of the 15th of March last, mention was made of certain complaints in regard to the quality of the Leeds gas. In consequence of these complaints a Sub-Committee of the Corporation Gas Committee was appointed to inquire into, and report upon the subject. At the last ordinary meeting of the Gas Committee, the Sub-Committee presented their report, which was taken into consideration at a special meeting held last Thursday; and, after considerable discussion, it was adopted. Resolutions were afterwards passed instructing the Town Clerk to send to the Borough Magistrates—from whom the complaints were received—a reply based upon the conclusions arrived at. These were that the low quality of the gas, on the occasions referred to, was caused by the admixture of air with the gas in the mains. The report recommended that special care should be taken to prevent a recurrence of this defect, and that further means should be adopted for the elimination of carbonic acid and sulphur impurities from the gas.

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* Fo. 2. Total suburban net for coals, per ton, *should be* 7 8·87, *not* 7 8·89
„ 4. Barnet. Working expenses, per 1000 „ 19·23 „ 12·23
„ 4. Crystal Palace, total management, p. ton „ 26·75 „ 24·75
„ 4. Wandsworth, coals and working expenses, per ton . . . . . „ 24 5·10 „ 24 5·20
„ 6. Barnet. Standard dividend, per ton . „ 29 11·52 „ 25 11·52
„ 6. Croydon. „ „ per 1000 „ 13·01 „ 13·10

Parliamentary Intelligence.

HOUSE OF LORDS.

MONDAY, JUNE 27.

LOCAL GOVERNMENT (GAS) PROVISIONAL ORDER BILL.—This Bill received the Royal Assent by Commission.

FRIDAY, JULY 1.

GAS PROVISIONAL ORDERS BILL.—This Bill was reported, with amendments.

The South Metropolitan Gas Bill, the Water Provisional Orders Bill, and the Brighton and Hove Gas Bill were referred to a Select Committee, consisting of Lord Monteagle (Chairman), Earl Harewood, Lord Balfour of Burley, Lord Belper, and Lord Haldon; to meet on Tuesday, July 5.

HOUSE OF COMMONS.

TUESDAY, JUNE 28.

The East London Water Bill (Lords) and the Oban Burgh Bill (Lords) were referred to a Select Committee, consisting of Colonel Stanley (Chairman), Sir J. Eardley Wilmot, Mr. W. H. Gladstone, Mr. F. J. S. Foljambe, and Sir John Duckworth (Referee); to meet on Tuesday, July 5.

Miscellaneous News.

PLYMOUTH AND STONEHOUSE GASLIGHT AND COKE COMPANY.

The Annual General Meeting of this Company was held last Thursday—Mr. GEORGE HENDERSON presiding—when the following report was submitted:—

The Directors, in presenting their annual report and statement of accounts for the year ending March 31 last, congratulate the Shareholders on the satisfactory condition of the Company.

At Michaelmas last the price of gas was reduced to private consumers from 2s. 2d. to 2s. 1d. per 1000 cubic feet; and the charge for the public lamps from £2 17s. 2d. to £2 15s. 10d. per lamp per annum.

After payment of the authorized half-yearly dividend, in January last, and carrying the sum of £2000 to the renewal fund, there remains to the credit of profit and loss a balance of £16,141 10s. 3d. Your Directors recommend the payment of a dividend, for the half year ending March 31 last, of 11s. 3d. per share on the original shares; 8s. 9d. per share on the additional shares; 4s. 4½d. per share on the new additional shares, free of income-tax; being at the rate of 11½ per cent. on the original shares, and 8¾ per cent. on the additional shares; the balance to be carried forward into the next account.

The new 21-inch trunk main is now being extended to the clock tower, and will enable the Company, for many years to come, to meet the increasing demand for gas in Plymouth and Stonehouse.

Four of the Directors—viz., Mr. George Henderson, Mr. Samuel Jackson, Mr. William Radford, and Mr. William Symons—retire by rotation, and being eligible, offer themselves for re-election. The retiring Auditor, Mr. Frederic S. Fowler, is eligible, and offers himself for re-election.

The CHAIRMAN, in moving the adoption of the report, said that the appearance of the balance-sheet justified him in anticipating that it would be cordially and unanimously adopted by the meeting. It was very gratifying to the Directors—more especially when they remembered how low was the price of gas—to think that they had been twice able to reduce the charge since obtaining their new Act of Parliament. It was pleasant, too, to find that the increase in repairs was not great during these two years, whilst the rental was £1112 more. This indicated a gradual and steady increase in the consumption. During the past winter the severe cold which prevailed enabled the Company to dispose of their coke and residual products at prices in excess of previous years. The result was that, as compared with 1879, there was an excess of income of £3432, the total expenditure being £52,363. Since the last meeting many improvements had been carried out, and the continuance of the 21-inch main to the clock tower would not only enable the Company to meet an increase in years to come, but equalize the pressure throughout the district, and in this way effect a saving in the leakage by reducing the pressure at the works. He was pleased to be able to tell the Shareholders that the Directors had been very fortunate indeed in making their contracts for coals, and they were now laying in stores rapidly at a low rate of freight. He felt sure this would not only be satisfactory news to the Shareholders, but to the consumers and the public at large; for, in consequence, the Directors had come to the conclusion to reduce the price of gas at Michaelmas next to 2s. per 1000 feet. When the extremely low rate at which the Company were already supplying gas was taken into consideration, he thought the Shareholders were fairly entitled to participate in the advantages which they had a right to claim under their new Act; and therefore, concurrent with the reduction of price, an increase of dividend would be declared. With regard to the future, the Directors could not hold out any expectation that the price of gas would be reduced below 2s. per 1000 feet. It had been their custom for many years to make an annual diminution in price, and he knew of no other company in existence which had made so many reductions; and he knew of no consumers who had received so many advantages as had the gas consumers of Plymouth. Having reduced the price of gas to 2s. per 1000 feet, the Directors desired to guard against any contingencies that might arise, which, under ordinary circumstances, would render it necessary to raise the price. In the event of another coal panic similar to that which occurred a few years since, they would be compelled to increase the price if they had no accumulation to fall back upon. It was against such an event as this that they wished to take precautions, because, as was well known, an increase of price was a most unpopular step. The present price of coals was very low, far lower than he had ever known it—in fact, some 2s. or 3s. per ton less than the average price since the Company had been in existence. If they were called upon to pay, as they probably would be at some future time, some 2s. or 3s. a ton more, a difference of between £6000 and £7000 a year in the cost of their coal bill would result. The Company could only meet such an increase in their expenditure as this by carrying forward a large sum from time to time, and the step was one which he had no doubt would commend itself to the wisdom of all present. It would be undesirable, if it could possibly be avoided, to resort to an advance of price, and, in the event of heavier bills, the Directors would endeavour to meet them as hitherto by keeping down the capital expenditure, by watching the cost of production; and if further reductions were possible, without prejudicially affecting the interest of the Company, the Proprietors might rely that the Directors would not be slow to concede them. With regard to the electric light, he had not the slightest fear that it would interfere with the prospects of the Company. The Governor of the London Gas Company had expressed a belief that the public were disappointed with it when brought under its influence. The cost involved in the use of it was considerably more than for the use of gas, and those who supplied it were obliged to do so even then at a loss. If the London Company, who were charging 3s. 2d. per 1000 feet, were not afraid of the electric light, he did not think the Company, who were charging only 2s. per 1000 feet, had much reason to be afraid of it either. If the Local Authorities at Plymouth and Stonehouse thought it prudent or wise to introduce the system of electric lighting into the streets, he was quite satisfied that the Directors of the Gas Company would not complain. He was very doubtful if the Company were properly remunerated by the town for lighting it. The cost involved in connection with the service was very considerable indeed. To begin, it cost the Company £500 or £600 a year to maintain a staff of lamplighters; there was a large annual outlay incurred in repairing and maintaining the lights; and the duty of providing the lamp-pillars devolved upon the Company; the waste arising from public lighting was much greater than the waste from private lighting; and the pressure on the mains had to be maintained during the night almost exclusively for public lighting purposes. He concluded by moving the adoption of the report and the declaration of the dividends.

Mr. W. SYMONS seconded the motion, and it was unanimously agreed to.

Mr. J. KING, when moving the re-election of the retiring Directors, said he could not deny himself the satisfaction of expressing his thanks to the Chairman for his ability in conducting the affairs of the Company. He was the father of the concern; had been associated with it the greater part of his life; and his energies had been mainly directed to its interests. The Shareholders, and the consumers likewise, were under a deep obligation to him. It was a proud thing for them to be able to say that, although their price for gas was the lowest in the kingdom, they yet stood in the most flourishing condition.

Mr. J. WILLS seconded the motion, and endorsed every word that had been uttered eulogistic of the Chairman.

Mr. PILLMAN remarked that the good service rendered by the Chairman was not only a matter upon which the Directors congratulated the Company, but upon which the Shareholders congratulated themselves. Mr. Henderson had the entire confidence of the Company, and his colleagues had likewise.

The CHAIRMAN, in acknowledging the vote, promised that nothing which experience and attention could admit of should be wanting on the part of the Directors to promote the interests of the Company in every possible way. They intended to go on in the old lines, and, if they did this, they would not err greatly.

Mr. PARKHOUSE moved, and Mr. J. ADAMS seconded, that Mr. Fowler should be re-elected Auditor; and, upon the motion of Mr. SPEARMAN, seconded by Mr. FEATHER, it was decided that the salaries of the Auditors should be increased from £30 to £40 per annum. Many complimentary expressions were used in regard to the care these gentlemen bestowed on their work, and in reference to the elaborately worked-out statement of the business of the Company which they were the means of presenting to the Shareholders.

The CHAIRMAN added a few words, and intimated that the consumers now numbered nearly twice as many as in 1861, when the salaries of the Auditors were first augmented.

Mr. PETER then moved, and Mr. CHASE seconded, a vote of thanks to the Officers of the Company.

In putting the resolution to the vote, the CHAIRMAN said that all in the employ of the Company were men who had long been associated with them. He was pleased to see around him so many old faces.

The SECRETARY (Mr. J. Thomas) felt the vote was appreciated by every one connected with the Company. They all had a personal interest in the concern, and were anxious to assist in promoting its prosperity.

The ENGINEER (Mr. J. T. Browning) also responded.

The CHAIRMAN, replying to a question as to whether the time had not come for reducing the meter-rents, remarked that the subject had frequently been discussed, and had always been found full of difficulties. A reduction of meter-rent gave the small consumer an unfair advantage over the large one. The Directors felt that by reducing the price of gas all participated in fair proportion. Of course, every consumer was at liberty to use his own meter. The cost of a meter was as great whether a man used 5000 or 50,000 feet of gas per annum.

The proceedings then terminated.

WESTERN (U.S.A.) GAS ASSOCIATION.

[Abstracted from the "Official Report" of the Proceedings, as published in the *American Gaslight Journal*.]

The Fourth Annual Meeting of this Association was held on May 11, 12, and 13, at St. Louis, Mo.—Mr. THOMAS BUTTERWORTH, the President, in the chair.

After some preliminary business,

The PRESIDENT made the following remarks in the course of his

INAUGURAL ADDRESS.

The past year has been one of the most successful on record as to our special branch of manufacturing business. If we take into consideration the great amount of competition—coal oil almost given away, electric light at less than cost—the increased sale of gas is truly wonderful, and to my mind is a convincing proof that in the future, as in the past, money invested in our business will be sure of a fair return in the shape of dividends, provided we, as gas managers, act like prudent business men; and I think this meeting will agree with me in the assertion that a gas manager, or some one connected with him, in addition to knowing how to make a good article of gas economically, must possess more than an average amount of business tact, and be able to use it at a moment's notice when called upon, in the thousand and one problems that are daily brought before gas managers for solution.

I can call to mind several instances in our own and adjoining States where the want of a little good business tact on the part of persons in charge of the management of gas-works has led to the substitution of coal oil or electricity for street lights where gas had been used for years. In one city of 13,000 inhabitants, on the expiration of the street lamp contract, the city council offered within 7 per cent. of what the gas company had bid to light the street lamps in a new contract; but so stubborn and unyielding were the gas people, that no offer of compromise was made or conciliation attempted, but instead street lamps were threatened to be shut off. Then the city ordered coal oil and electrical machines, as if such things cost nothing; and will spend money free as water "to teach the gas men a lesson," as they put it. This is not an isolated case by any means. It is only one of many where the lack of a little common business sense has culminated in serious loss, not only to the gas company directly concerned, but to the entire gas interest.

Again, in some towns it seems to me as if the parties in charge of street lighting try how little and not how much light can be got out of gas burned in street lamps. What is really a good candle-power gas is cut down 25 or 50 per cent. of its light-giving qualities by unsuitable burners and dirty lanterns. It may be that the gas manager cannot help such things, not having the control of lamp lighters or lighting; but he can offer a great many suggestions to the party who has control, and if it took all summer and all next winter I would keep offering suggestions until things suited me.

In all cases where it can be done, I am convinced that gas companies ought to have full control over street lighting, even to the actual ownership of lamp-posts and all. Then, with a very little attention to furnishing the kind of burners suitable to the quality of gas supplied, having the lanterns

regularly cleaned and in good repair—these things will go a great way towards giving satisfaction to both city council and citizens in general, who will in the end, notwithstanding so much has been said to the contrary, be willing to pay a fair price for a good street light that is always on hand when wanted.

In cooking and heating by gas there seems to be an unlimited field for extending our sales. What little effort I have made to introduce gas-stoves has convinced me that, in the near future, 20 per cent of my total sales will be used for other than lighting purposes. The manufacturers of gas-stoves have shown a very commendable degree of enterprise and no small amount of skill in bringing to our notice stoves that will do the work they are intended to do, and in such a manner as to cause no offensive fumes or smells such as we find when cooking the same kind of food with any other fuel than coal gas.

With the use of gas for motive power I have had no experience, not having been able as yet to purchase gas-engines for what I consider such engines ought to be made and sold. I have, and I suppose most of you have also, been asked to furnish gas for use in gas-engines at a less price than for other purposes. I do not know how it looks to others, but to me (having sold gas for years, when our town was small, absolutely at cost, and for more years than one I had to earn money from outside sources to pay taxes and keep the concern going), it looked a little cheeky to be asked to reduce the price of gas to help sell gas-engines at prices that must yield over 100 per cent. on the cost of manufacture. Every gas manager is more or less compelled, from the very nature of the business, to buy and use special machinery, and has to pay the prices asked or go without the machine; while, on the other hand, what he has to sell has in most cases an arbitrary price fixed by legislation, irrespective of cost of material or wages paid to make gas; and in small towns he is compelled to educate the people in the use of gas as a necessity, not a luxury, before he can make sales large enough to establish his works as a paying concern. Now, such being the case, I most earnestly and urgently ask of the manufacturers of machinery to be used for special purposes in and about the gas business, to do as all good gas managers do—put down the price of your machines as low as you possibly can, consistent with making a first class machine, and depend upon increased sales to make up your profit. Do this, and your patents will not run out untried, unused, and unsold.

Some 25 or 30 years ago, when iron retorts were in use, we used to build our furnaces very low down in the bench, and make very narrow slits or openings, only just one grate-bar, splaying the furnace out to 15 inches wide at 2 feet above the grate-bar, taking great pains to have tight brickwork, to keep out cold air, as it cut the iron retort, so to speak, wherever it impinged on it. On one occasion our engineer gave instructions to run flues back and forward under the bed, through which to pass in cold air that would accumulate heat in its travels. These flues had their exit just over the fire surface and under the bed shield tile of the bottom retort on each side of the furnace. In 90 days we had no retorts or bed tile left—only one mass of melted lava, which we had to dig out with chisel and sledge. I have now up, and ready for next fall, a bench of five fire-clays set as nearly as possible on the above-named plan, the working of which I hope to be able to lay before you at some future meeting.

During the two years last past we have had brought to our notice again and again the great saving in fuel and the better yield of better gas produced by using some of the various kinds of gas-fuel producing or so called generator furnaces. My own experience would lead me to doubt their being an improvement in small works, and for large works we have the statement of the Paris Gas Company, after 18 years' experimenting and trials, that money expended in making the change from common to generator furnaces will not pay 6 per cent. interest. It is for parties interested to say how much we in the West can afford to pay for experiments not yielding 6 per cent. on the Continent of Europe. There may be places where a cheap coal can be had for converting into gas fuel (so as to allow us to sell all the coke made), where regenerator furnaces can be used to advantage.

While on this subject, allow me to point out to you the wide difference that sometimes exists between statements made by the correspondents in our technical papers, when writing up their furnaces, and the balance-sheets submitted to the stockholders in companies using such furnaces. Some time ago a correspondent in the London JOURNAL OF GAS LIGHTING, in speaking of a generator, made the statement that after years of experimenting and adapting some of the best features of Continental, European, and American furnaces, a furnace had been produced that only used 12 per cent. of the coke made; whereas the common, ordinary furnace of the same size and capacity used fully 20 per cent. of all the coke make. The writer then very modestly stated that these results were not always secured, but on an average the saving of fuel by the generator furnaces spoken of may be taken as fully 25 per cent. of the old consumption. A little while after, in the JOURNAL, was published the balance-sheet of this company, using both the old style of furnace, said to be consuming only 20 per cent. of the coke made, and the new style of generator, using only 12 per cent. of the coke made; yet the balance-sheet showed that 27 per cent. of all the coke made was used in the furnaces of this company, of whom it is said that "nothing succeeds like success." When one of the stockholders asked about this using so much coke, the managing engineer made the statement that 27 per cent. was not, in his opinion, an excessive amount as things now go, and at the same time he expressed a kind of doubt of other companies being able to get along with only 20 per cent. of the coke made. With such statements as these before us, I ask you, friends, ought we not, as careful business men, to give a great deal of thought to this subject before we recommend our directors to expend money in making doubtful changes?

In saying what I have, I hope the gentlemen who do not know me will not set me down as an old fogey, afraid to move out of a given line; for I can truthfully say that I have tried more new things than I ought to have done. And should this Association, or any part of it, enter into an arrangement to fill out blanks to be agreed upon, of actual results (and I sincerely hope and recommend that such a course be adopted for our own information, not for publication outside of actual contributors), in such event I shall contribute my share of statistics, be they good or bad, and willingly submit to be placed in the class that results justify.

With reference to the treatment of gas after leaving the retort, I feel satisfied that we have much to learn, and there are many moot questions to settle. Some gas-works are so situated as to be using a coal that makes it incumbent on the manager to get all the yield of gas possible, paying no attention, or very little, to amount of tar or other residuals. Again, other works may be compelled to use a coal full of ammonia, carbonic acid, and what we call other impurities. In the last case the manager must not run his gas production too close. The last few feet to distil over may render his whole make unmerchantable, so to speak. But by governing his yield to the known capacity of his purifying plant, though getting from 1000 to 1500 feet less gas per ton than his neighbour with better coal, yet by attending to what have heretofore been considered bye-products—and waste, so far as our section of the country is concerned—he may be able at the end of the year to show a more favourable balance-sheet. So far as tar and ammoniacal liquor are produced, they may now be said to be fixed factors of income if properly handled. But there is one production that it seems to me ought to be handled more to our benefit than has yet been done. I refer to carbonic acid. Some of our coals contain such quantities of it as to greatly reduce the illuminating power of the gas. But instead of costing us money to get rid of it, carbonic acid ought to, and I feel certain soon will be handed over to the soda manufacturer in such a shape that he can afford to pay for it. There is a large money value to be realized by the gas manager who shall devise a way for eliminating from crude coal gas the last vestige of ammonia, sulphuretted hydrogen, and carbonic acid, in closed vessels, by adding thereto such compounds as may be needed to fix them in proper shape for the chemical manufacturer to obtain the 80 lbs. to 100 lbs. of soda-ash that every ton of coal is said by chemical experts to contain. This is one of the problems that must be solved, and that, too, in the near future; and we, as gas managers, ought to do it. By so doing we can reduce the price of gas, and at the same time add to our ability to pay fair dividends.

SALE OF GAS SHARES.—Last Thursday Mr. Bottomley sold by auction at Newport (Mon.) £175 worth of consolidated "A" stock of the Newport Gas Company, bearing 10 per cent. dividend, for £310. Also £280 of class "B" (7½ per cent.) stock, which fetched £375; and 14 £20 "C" shares, fully paid up, and bearing 7 per cent. dividend, were sold for £340.

THE SMETHWICK LOCAL BOARD GAS UNDERTAKING.—The *Birmingham Daily Post* states that arrangements have, it is understood, been made between the Gas Committee of the Corporation of Birmingham and the Smethwick Local Board to transfer, on the 1st of October next, the part of the Corporation gas undertaking purchased by Smethwick. This is considerably earlier than the date fixed in the award, which was July 1, 1882.

ROSS'S STOKING MACHINES.—In reference to the article descriptive of these machines, which appeared in our issue of the 7th ult., our American Correspondent writes: "I notice in my article on the Ross Stoking Machines on page 970, 40th line from top of second column, it reads, 'gives 48 retorts drawn,' &c. This should obviously be 40. I do not know whether it is a typographical error, or a blunder in copying. My manuscript shows the correct number—viz., 40. Perhaps it would be well to note it under errata."

FORTHCOMING EXHIBITION OF GAS APPLIANCES, ETC., IN ABERDEEN.—As will be seen by an advertisement in another portion of to-day's JOURNAL, that it is intended to hold an exhibition of appliances for lighting, cooking, heating, and the production of motive power by gas or oil, in the Marischal College Buildings, Aberdeen, under the auspices of the Aberdeen Philosophical Society, from the 19th of September to the 1st of October next. Facilities will at the same time be afforded for a display of the electric light, the college quadrangle being available for an outdoor exhibition, while the entrance and exhibition halls will serve to show its applicability for indoor illumination.

ANNUAL DINNER OF THE EMPLOYÉS OF THE GAS-METER COMPANY, LIMITED.—A pleasant gathering of the *employés* of the Gas-Meter Company, Limited, took place at the Rye House on Thursday last. After dinner and the usual loyal toasts, the Secretary of the Company (Mr. W. A. Cogar)—having made a short speech expressing the general esteem of the officers and men towards Mr. W. W. Andrews upon his retirement as General Manager of the Company, and their pleasure at his being elected to a seat upon the Board of Directors—presented him with a handsome testimonial in the shape of a piece of plate from the *employés* at the works, 238, Kingsland Road, and a pair of silver goblets from those at the Dublin works.

THE GAS AND WATER SUPPLY OF NEWARK.—At the last meeting of the Newark Town Council, sitting as the Urban Sanitary Authority, a suggestion was thrown out that overtures should be made to the Gas and Water Companies for the purchase of their works. Mr. Pinder, who introduced the subject, said that notwithstanding the progress that had been made with the electric light, the supply of gas was, and would continue to be a very profitable business, and he thought it was most desirable that the gas undertaking at Newark should be in the hands of the Sanitary Authority. Mr. Earp then brought forward the subject of the purchase of the water-works, remarking, in doing so, that he considered a population of 14,000 persons should not be dependent simply upon the directors of a commercial undertaking for a supply of pure water. He moved that the Clerk be authorized to write to the Water Company, and ascertain whether they were prepared to entertain a proposal to transfer their undertaking to the Urban Sanitary Authority upon terms to be agreed upon. The motion was carried, as was also one authorizing the Clerk to write in similar terms to the Gas Company.

THE ELECTRIC LIGHT IN THE HOUSE OF COMMONS.—Last Tuesday evening Mr. Shaw-Lefevre stated in the House of Commons, in answer to Mr. O'Shea, that he gathered from the general opinion of members that they were not satisfied with the electric lighting of the House. It was only right to add that the electric light people were of opinion that the experiment could not be fairly tried until many improvements were made, especially with respect to the position of the lamps. These improvements could not be carried out at present, and therefore he would postpone the further prosecution of the experiment until the recess. A "London Correspondent" of a country paper, writing on the 25th ult., says: "The balance of opinion is certainly against the electric light in the House of Commons. The trial last night shows all the disadvantages of the Brush system, at any rate in its present stage of development. The general effect suggests daylight in an advanced state of decomposition, if such a perversion of a scientific illustration is permissible. The light flickers a good deal, which makes it all the more trying to the eyes, and there is a disagreeable fizzing noise, like the uncorking of flat champagne. The Swan light under the galleries was very pleasant, but wholly inadequate. A soft radiance was emitted, but there was too little of it, and what there was wasted itself on the panels overhead. The Swan light will be useful to members who wish to relieve their eyes after the glare of the Brush, but as everybody will want to sit on the back benches, there may be some confusion."

THE HULL TOWN COUNCIL AND THE ELECTRIC LIGHT.—A special meeting of the Lighting Committee of the Hull Town Council was held on Monday last week—Mr. Elam in the chair—to consider the report of the Chairman and the Borough Engineer (Mr. J. F. Sharp), the deputation who had visited London to inspect the electric lighting systems in use there. They reported in favour of the Siemens system, and the Chairman explained that the 300-candle power lamps of this firm, in their opinion, gave in comparison with the Brush lamps of 2000 estimated candle power, a much superior illumination in proportion to the stated candle power. The Mayor (Alderman Leak) said he was not satisfied as to the cost, or that the Siemens light was the best. Experiments were now being made in London to ascertain what improvement in street lighting could be effected by gas, by erecting some of Mr. Sugg's new lamps and burners. He had seen these lamps, and was thoroughly in favour of the light afforded by them. He made this remark for the purpose of asking the Committee to

defer action in the matter until these experiments had been completed. After a long discussion, the Chairman moved, and Mr. Myers seconded—"That tenders, in accordance with the report, be obtained from Messrs. Siemens and the Electric Light and Power Generator Company, Limited, for lighting the Town Hall." Two amendments were proposed, but neither was carried, and it was left to the Chairman to introduce his motion to the Council.——At the meeting of the Town Council last Thursday, Mr. Hall moved and Mr. Myers seconded the following motion—"That tenders, in accordance with the recommendation of the report of the deputation, be obtained from Messrs. Siemens Bros. and Co., Limited, and from the Electric Light and Power Generator Company, Limited." Mr. Witty thought that until the electric light was further developed the Council should not decide anything definite. He moved as an amendment —"That, seeing all the systems of the electric light have not been fully tested in London, and that consequently the cost of all the experiments now being there tested has not been ascertained, no further action in the matter be taken until this Council are in possession of further and more complete information as to the relative merits and cost of each system of electric lighting." Dr. Gibson seconded the amendment, which, after a long discussion, was carried.

RETURN to the Metropolitan Board of Works of the testings made at the gas-testing stations during the week ending June 29, 1881.

Company.	District.	Illuminating Power. (In Standard Sperm Candles.)			Sulphur. (Grains in 100 Cubic Feet of Gas.)			Ammonia. (Grains in 100 Cubic Feet of Gas.)			Sulphuretted Hydrogen.	Pressure.
		Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.		
The Gaslight and Coke Company	Notting Hill	17·8	16·7	17·2	10·4	6·5	8·5	0·2	0·0	0·0	None.	In excess.
	Camden Town	17·3	17·0	17·2	12·5	10·8	11·3	0·2	0·0	0·1	"	"
	Dalston	17·6	16·9	17·2	12·5	9·4	11·3	0·0	0·0	0·0	"	"
	Bow	17·0	16·6	16·8	17·5	9·0	12·2	1·0	0·3	0·6	"	"
	Chelsea	17·3	16·7	17·0	11·2	9·5	10·3	0·5	0·0	0·1	"	"
	Kingsland Road	17·5	16·9	17·2	13·6	10·1	12·2	0·4	0·1	0·2	"	"
	Westminster (cannel gas)	21·5	20·5	21·1	9·4	7·8	8·5	0·2	0·0	0·0	"	"
South Metropolitan Gas Company	Peckham	16·8	16·4	16·6	11 7	10 0	10·9	0·6	0·0	0·3	"	"
Commercial Gas Company	Old Ford	17·6	16·8	17·1	10·2	8 5	9 2	0·4	0·2	0·3	"	"
	St. George-in-the-East	17·3	16·8	17·1	7·9	6·5	7·4	0·4	0·3	0·3	"	"

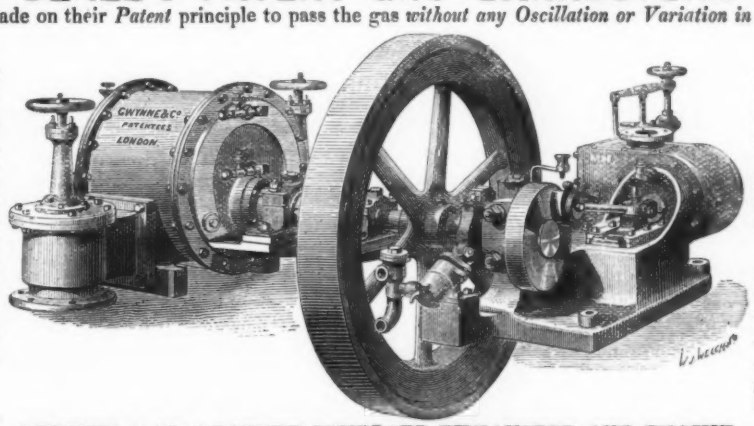
(Signed) T. W. KEATES, F.I.C., Consulting Chemist and Superintending Gas Examiner.

Note.—The standard illuminating power for common gas in the Metropolis is 16 sperm candles, and for cannel gas 20 sperm candles. Sulphur not to exceed 20 grains in the 100 cubic feet of gas at Peckham station, and 17 grains at all other stations. Ammonia not to exceed 4 grains in the 100 cubic feet of gas. Pressure between sunset and midnight to be equal to a column of one inch of water; between midnight and sunset, six-tenths of an inch.

GWYNNE & BEALE'S PATENT GAS-EXHAUSTERS & ENGINES.

Can be made on their *Patent* principle to pass the gas *without any Oscillation or Variation in Pressure.*

THE GRAND MEDAL of MERIT at the VIENNA EXHIBITION, TWO MEDALS at the PHILADELPHIA EXHIBITION, and TWO MEDALS at the PARIS EXHIBITION, have been AWARDED to GWYNNE & Co., for GAS-EXHAUSTERS, ENGINES, and PUMPS; Also 27 OTHER MEDALS AWARDED at all the GREAT INTERNATIONAL EXHIBITIONS.



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Have made the largest and most perfect GAS-EXHAUSTING MACHINERY in the world, and have completed Exhausters to the extent of 14,000,000 cubic feet passed per hour, of all sizes from 2000 to 210,000 cubic feet per hour.

The Judges' report on the COMBINED EXHAUSTER and STEAM-ENGINE exhibited at the Philadelphia Exhibition is —"*Reliable compact Machine, well adapted for the purpose intended, of excellent workmanship.*"

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GWYNNE & CO. do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, *but to produce machinery of the very highest quality, and most approved design and workmanship.* The result is that in every instance their work is giving the fullest satisfaction. Numerous testimonials and references can be given to Companies using their Machinery for years past.

Regulators, Bye-Passes, Stop-Valves, Gas-Valves, Station Governors, and Gas Machinery of all Sizes.

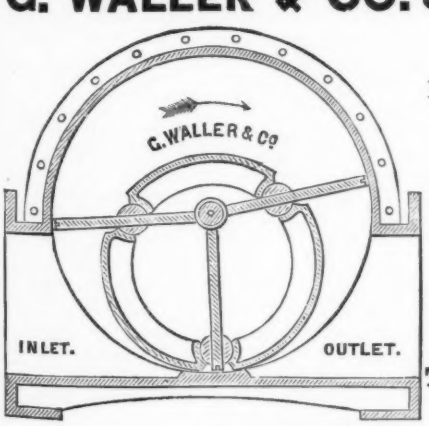
PLEASE ADDRESS IN FULL, GWYNNE & CO., Hydraulic and Gas Engineers,
ESSEX STREET WORKS, VICTORIA EMBANKMENT, LONDON, W.C., ENGLAND.

Gwynne & Co.'s New Catalogue on Gas-Exhausting and other Machinery may be obtained on application at the above Address.

G. WALLER & CO.'S NEW PATENT GAS EXHAUSTER.

REDUCED OSCILLATION, FRICTION, AND ENGINE POWER.

WORKED BY BELT OR ENGINE COMBINED.



It has also the following Advantages:—

Reduced cost of Engine, Boiler, and Brickwork.
Economy in yearly cost of Fuel, Oil, &c.
Less Slip, and increased Delivery.
Steady working without heavy Fly-wheel.

ALSO MAKERS OF

BEALE'S AND PUMPING EXHAUSTERS,
INDEX, DISC, AND HYDRAULIC MAIN VALVES,
SELF-ACTING BYE-PASS VALVES,
TAR, LIQUOR, AND WATER PUMPS, DIRECT OR BY GEAR,
SCRUBBERS, PURIFIERS, CONDENSERS, BOILERS, &c.

Descriptive Circular of New Patent Gas Exhauster can be had on application.

SEE ALSO ADVERTISEMENT PAGE, 28.

PHŒNIX ENGINEERING WORKS:
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THE GENERAL GAS HEATING AND LIGHTING APPARATUS COMPANY, LIMITED.

Incorporated under the Companies' Acts, 1862 to 1880, whereby the Liability of the Shareholders is limited to the Amount of their Shares.

CAPITAL, £50,000, IN 5000 SHARES OF £10 EACH.

Deposit £1 per Share on Application and £2 per Share on Allotment, and the remainder as may be required, but One Month's Notice at least will be given of any Calls.

3000 *ORDINARY SHARES ARE NOW OFFERED FOR ALLOTMENT.*

IF NO ALLOTMENT IS MADE, DEPOSITS WILL BE RETURNED IN FULL.

Interest at the rate of £5 per cent. per annum will be allowed upon all payments in advance.

DIRECTORS.

JAMES GLAISHER, Esq., F.R.S., Blackheath, Kent, *Chairman.*
ALFRED CARPENTER, Esq., M.D., J.P., Duppas House, Croydon.
ALFRED KITT, Esq., C.E., 1, Lupus Street, Pimlico, S.W.
WILLIAM C. PARKINSON, Esq., Cottage Lane, City Road, E.C.
CORBET WOODALL, Esq., C.E., Palace Chambers, Bridge Street, Westminster, S.W.
S. LEONI, Esq., *ex officio*, Adamas Works, St. Paul Street, Islington, N.

SOLICITORS—Messrs. YOUNG, JONES, ROBERTS, & HALE, St. Mildred's Court, E.C.

BANKERS—LONDON AND COUNTY BANK, Lombard Street, E.C.

SECRETARY (*pro tem.*)—WILLIAM ROBERTSON, Esq.

Registered Offices of the Company—No. 40, FINSBURY CIRCUS, LONDON, E.C.

PROSPECTUS.

The Metropolis contains upwards of half-a-million houses; of this number more than one-half are not, and never have been, supplied with Gas, while only in a very small proportion of the remainder is Gas used for the purposes of Heating and Cooking, though its great advantages for these uses are now generally admitted. A principal reason for this is to be found in the fact that the first cost of gas-fittings, and especially of stoves, forms a burden which many householders hesitate to incur.

The considerable reduction recently notified in the price of Gas in London, and in many provincial towns, together with the attention which has been called to the nuisance of smoke consequent upon the wasteful use of coals for cooking and warming, which the use of gas would materially diminish, has suggested that the present is an opportune period to found a Company for the purpose of supplying and fitting every kind of apparatus of the best description for the use of Gas for Heating, Cooking, Motive Power, or ordinary Lighting, so as to bring them within reach of all classes.

The published reports and recent operations of many Gas Companies show them to be alive to the advantages derivable from an extension of their business in these directions. With the purpose of enlightening the public on this matter, Exhibitions of Gas Apparatus, promoted by various Gas Companies and Corporations, have been lately held in many large towns, including Birmingham, Leicester, Coventry, Leeds, Bradford, Newcastle-on-Tyne, South Shields, Halifax, Ipswich, Glasgow, Belfast, and Dublin, and the interest of the public in these Exhibitions was proved by the large number of persons who visited them.

Many Gas Companies have already adopted a system of providing their consumers with Kitcheners on hire for Cooking by Gas at a small quarterly rent. It is believed that this system, so beneficial alike to the Companies who produce and the public who consume, will have a large extension, and that this Company may fairly expect its full share of business from this source.

Gas has hitherto suffered in public estimation, and its use been largely retarded, by the failure to devise really efficient apparatus in which to employ it, but of late years great improvements have been made in this direction; and this Company will not limit itself to the invention and manufacture of apparatus, but will seek to introduce the best productions of other makers.

The Company propose to establish Depôts in town and country, where apparatus can be seen in operation, and where arrangements can be made for the proper erection and fitting of the same by competent workmen.

This Company has acquired as a nucleus the well-known and established business of Messrs. S. Leoni and Co., Engineers and Manufacturers of Gas Apparatus for Heating, Lighting, and Cooking, St. Paul Street, New North Road, and 74, Strand, London, and has retained the services of Mr. Leoni as Manager.

The Company will acquire the various leases, plant, machinery, tools, fixtures, fittings, dies, and patterns, at the agreed price of £9200. The Company will also acquire the stock-in-trade, both manufactured and unmanufactured, at the cost price of £13,240, of which £8000 will be paid in shares, the dividend upon which is contingent upon all the paid-up ordinary capital receiving interest at the rate of at least 6 per cent., the balance of £5240 in equal proportions yearly for five years in cash, or in similar deferred shares as the Directors may elect; the first instalment to be paid 31st of December, 1881.

Mr. Leoni binds himself to retain an interest in the Company to the amount of £5000 in fully paid-up shares for a period of seven years.

No promotion-money will be paid, and it is intended to place the shares privately, without the expense of advertising.

The only contracts with the Company are two, respectively made between S. Leoni of the one part and the Company of the other part, dated respectively the 16th day of June, 1881, and which may be inspected at the Offices of the Company. It will be seen from these contracts that the Company take over the benefit and undertake the performance of existing orders and contracts in connection with the business, since the 31st of December, 1880. It is believed that these last-mentioned contracts are not such as require to be specified under the provisions of the 38th section of the Companies' Act, 1867, but attention is called to them here in order to obviate any question on the subject.

Prospectuses and Forms of Application may be obtained from the Bankers and at the Offices of the Company, and the Memorandum and Articles of Association may be seen at the Offices of the Company.

WILLIAM SUGG & COMPANY, Limited,

VINCENT WORKS, Vincent St., Westminster; GRAND HOTEL BUILDINGS, Charing Cross, S.W.; and RUE DES PYRAMIDES, Avenue de l'Opera, Paris.

Engineers & Manufacturers of Apparatus for Lighting, Heating, & Cooking by Gas.

Mr. WILLIAM SUGG's business, with its Goodwill, Stock-in-Trade, Plant, and Machinery, Leases of Premises, and Patents, have been valued by Mr. R. P. Spice, C.E., at £80,000. The Directors have arranged that the Vendor shall transfer the same to the Company for £40,000 in cash, and half the net profits after £7 per cent. has been paid to the Shareholders. The other half of the net profits being paid to the Shareholders in addition to the said £7 per cent.——It is intended to apply to the Committee of the Stock Exchange for a quotation.

CAPITAL, £150,000, IN 15,000 SHARES OF £10 EACH.

FIRST ISSUE OF 10,000 SHARES.

These 10,000 Shares are now offered to the Public at par, payable as follows:—

10s. on Application, 10s. on Allotment, £1 in one month after Allotment, the remainder in Calls, not to exceed £2 each Call, with intervals of Three Months between each Call. It is not anticipated that more than £6 per Share will be required.

DIRECTORS.

CAPTAIN GIFFARD, Chairman, Director of The Gaslight and Coke Company, 53, St. George's Square, S.W.
HY. LAWRENCE HAMMACK, Esq., C.C., Director of the Commercial Gas Company, 59, Bishopsgate Street, E.C.
N. E. B. GAREY, Esq., Director of the Continental Union Gas Company and the Cie. L'Union des Gaz, 60, Anerley Park, S.E.
S. E. ILLINGWORTH, Esq., J.P., 9, Norfolk Crescent, W., and Borough Court, Winchfield.
R. H. JONES, Esq., J.P., F.S.S., Vice-President of The Gas Institute, The Briars, Sydenham, S.E.

MANAGING DIRECTOR AND ENGINEER.—WILLIAM SUGG, Esq., A.I.C.E.

BANKERS.—THE CENTRAL BANK OF LONDON, 52, Cornhill, E.C. AUDITORS.—To be elected by the Shareholders at the General Meeting.

SOLICITORS.—Messrs. ARGLES and ARGLES, 85, Gracechurch Street, and at No. 10, Rue Louis le Grand, Avenue de l'Opéra, Paris.

Temporary Offices—85, GRACECHURCH STREET, E.C., and 1, GRAND HOTEL BUILDINGS, CHARING CROSS, S.W.

The object of this Company is to take over, and by largely extending the important works of Mr. Sugg, to furnish the public with the best means and appliances for burning Gas, not only for Lighting, but for Heating and Cooking purposes, for which the demand is much on the increase.

The well-known business of Mr. Sugg has been established since the year 1838. From that time to the present it has continued to grow until it is becoming inconveniently large for the resources of the present owner, and sufficiently extensive to justify its conversion into a Joint-Stock Company. Its customers are to be found in every country to which the use of Gas has been extended, and agencies are established in most of the principal cities of the world.

The Directors are largely interested in the prosperity of Gas undertakings, and possess a knowledge of the wants of the present time in that respect.

A contract has therefore been entered into on behalf of the Company, for the purchase of Mr. Sugg's business, both in England and France, as a going concern, together with the Patents of his several Inventions, the Leases of the Premises, the Plant and Machinery, and the Stock-in-Trade, for the sum of £40,000, and half the net profits after £7 per cent. has been paid to the Shareholders.

The amount of the purchase-money has been based upon a valuation made by Mr. Robert Paulson Spice, M.I.C.E., of Parliament Street, Westminster, the particulars of which are stated in his report, a copy of which accompanies this prospectus.

The net profits will, therefore, be divided as follows:—

First. Set aside £1000 per annum as a reserve fund.

Second. Seven per cent. per annum amongst the Shareholders.

Third. Any surplus of the net profits over 7 per cent. to be equally divided for 21 years between Mr. Sugg and the Shareholders; after 21 years the whole to go to the Shareholders.

The only Gold Medal given by the Jurors of the Paris Exhibition in 1878, was awarded to Mr. Sugg for superiority in Burners; his competitors being all the Gas-Burner Makers of repute in Europe. In the present year he has been awarded two Medals of the First Order of Merit by the Jurors of the Melbourne Exhibition; one being for his Burners and Improved Street Lanterns, and the other for Photometrical Apparatus for determining the Illuminating Power of Gas; he has recently taken out Patents for important improvements for Cooking by Gas, and for Heating Stoves and Baths by Gas.

The following is a list of Mr. Sugg's several Medals for Burners and progress in Gas Industry, dating from the year 1862:—Bronze Medals: London, 1862; Paris, 1867. Only Medal for Burners, York, 1879. Two Gold Medals, Paris, 1878. Highest Award, Glasgow, 1880. Melbourne Exhibition, 1881: First Order of Merit for Photometers, and First Order of Merit for Burners and Lamps for Street Lighting.

The most recent demonstration of the value of his arrangements for Street Lighting is in Parliament Street, Westminster, extending from the foot of Bridge Street to and including Trafalgar Square; this may be referred to as the best lighted street and square in London, the latter having been carried out by order of H.M. Office of Works.

Mr. Sugg's inventions are patented in England, and some in France and Belgium. All these Patents will become the property of the Company. The latest inventions are only provisionally registered at present.

No promotion-money will be paid.

The only contract entered into by or on behalf of the Company is one dated the 29th day of June, 1881, and made between William Sugg of the one part, and the Directors of the Company, as Trustees for the Company, of the other part.

The above contract, together with the Memorandum and Articles of Association of the Company, are open for inspection at the Offices of the Solicitors to the Company.

Prospectuses and Forms of Application for Shares may be obtained on personal application, or by letter addressed to Mr. Sugg, the Managing Director, at 1, Grand Hotel Buildings, Charing Cross; or from the Bankers or Solicitors.

In the event of no allotment being made, all amounts paid on application for Shares will be returned in full.

21, *Parliament Street, Westminster, S.W., May* 30, 1881.

Gentlemen,—I beg to report that the business of Mr. William Sugg has attained to its present importance by the application of profits to capital.

Its steady development in the past may be readily indicated by the returns for the last ten years, as follows:—

1871	£16,102 16 11	1876	£26,314 1 7
1872	18,492 5 6	1877	32,344 9 9
1873	21,104 13 8	1878	31,189 10 1
1874	23,658 10 2	1879	41,610 12 0
1875	26,430 11 2	1880	50,913 8 4

The profits for 1879 and 1880 appear in Mr. Sugg's accounts, which have been well kept, as £7267 and £7382 respectively; which is £3000 more than is required to pay 7 per cent. on the amount proposed to be called up, and the capabilities of the undertaking are far from being fully developed.

In valuing the entire undertaking as a going concern, and dealing with the results realized, I am opinion that for the goodwill, plant, machinery, and tools, leases of all the premises in London and Paris, the stock-in, trade, and the several Patents awarded to Mr. Sugg for his inventions, the sum of £80,000 is a fair price.

The following are the details of the valuation:—

The Patents, which are 30 in number, some of them being of great value	£25,000
Goodwill	20,000
Stock-in-trade, at a discount from net cost	20,000
The Leases of the several Premises in Vincent Street, Grand Hotel Buildings, and in Paris	10,000
And Plant, Machinery, and Working Tools of all kinds	5,000
	£80,000

Appended hereto is a certificate verifying the profits of the undertaking for the last two years, and I have only to observe that these profits would have been greater but for the application of revenue to capital purposes.—I am, Gentlemen, yours faithfully,

R. P. SPICE.

To the Directors of William Sugg and Company, Limited.

30, *Gracechurch Street, London, June* 20, 1881.

To R. P. Spice, Esq., C.E., 21, Parliament Street, Westminster, S.W.

Dear Sir,—I beg to report that I have examined the Books and Accounts of Mr. William Sugg, of Vincent Works, Vincent Street, Westminster, and hereby certify that the Profit for the year ending 30th June, 1879, amounted to £7267, and for the year ending 30th June, 1880, to £7382.—I remain, dear Sir, yours very faithfully,

ALF. LASS, *Fellow of the Institute of Chartered Accountants.*

WANTED, Readers of a Pamphlet, prepared for Gas Companies to distribute to Gas Consumers—"Cooking & Heating by Gas;" on Burners, &c. Copies, by post, Threepence, direct from the Author, MAGNUS OHREN, Assoc.M.I.C.E., Gas-Works, SYDENHAM.

WANTED, by the Advertiser, aged 19, a Situation in a Gas-Works, as TIME or STORE KEEPER, or any place of trust. Has Collected Accounts, &c., and understands the Taking of Meter Indices. In present situation two years. Satisfactory reasons given for leaving.
Address No. 758, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, a Situation as Foreman or Working Manager of a small Gas-Works. Above 20 years' experience. Thoroughly understands the Setting of Retorts, Laying Mains and Services, Fitting, and Repairs. Highest references from present employers.
Address F. J. COLINGWOOD, Esq., Engineer, Gas-Works, RHYL.

WANTED, Constant Employment as RETORT-SETTER, Day or Piece Work, at home or abroad; 15 years' first-class testimonials.
Address R. S., Office 39, Palace Chambers, 9, Bridge Street, WESTMINSTER.

TO RAILWAY AND GAS COMPANIES.

SITUATION wanted as Gas-Fitter, by by a respectable young man. Aged 26.
Address H. T., 12, Priory Cottages, Sangley Road, CATFORD, S.E.

TO CONTRACTORS, WATER-WORKS COMPANIES, AND OTHERS.

SITUATION Wanted, by a General Foreman, to Superintend Main Laying or the Construction of Water-Works. First-class testimonials; 28 years' experience.
Address B. H. H., 18, Manchester Street, Gray's Inn Road, LONDON, W.C.

YOUTH, aged 16, desires to learn Gas Engineering. Has a good taste for Drawing.
State terms, &c., to No. 754, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, for a Country Gas-Works making 7 million cubic feet of gas a year, a Competent, Steady STOKER, who has been accustomed to the Management of an Engine and Exhauster.
Apply by letter to No. 756, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

KENT COUNTY ASYLUM, CHARTHAM DOWN, NEAR CANTERBURY.

WANTED, a Stoker with a thorough Knowledge of the Manufacture of Gas, and capable of Managing a small Works. Wages 24s. per week, with cottage, coals, and gas.
Applications with testimonials to be sent to the STEWARD, at the Asylum.

TO GAS-WORKS MANAGERS.

WANTED, a Working Manager for a small Gas-Works in Ireland. The person appointed must be a good Practical Fitter, and not only capable of directing, but of doing any work that may be required of one who will have the sole charge of the Works. The wages will be 30s. per week, with house, coal, and garden free.
Applicants must not be too fond of whiskey, and their moral character must be good, while their ability to manage by themselves must be shown by references to other works of which they have successfully had entire charge.
Copies only of testimonials to be sent addressed to No. 760, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO CHEMICAL ENGINEERS.

WANTED, Address of those who will Furnish Plans and Specifications for the Erection of Plant for the Making (to commence with) of about 20 tons of Sulphate of Ammonia monthly. And also of Vitriol Chambers and Plant.
Address No. 759, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO OWNERS OF GAS-WORKS AND COMPANIES.

WANTED to Lease or Work by arrange- ment, Gas-Works, with a view to the Manufacture of Gas under a new process, whereby the returns are considerably increased.
Apply to ENGINEER, care of W. E. Pearse, Chartered Accountant, 4A, CHEAPSIDE, E.C.

WANTED, Second-hand, two Purifiers, about 6 or 8 ft. square, in good condition.
Address R. KEMP, Bagshot, SURREY.

WANTED, a good Second-hand Gas EXHAUSTER, capacity from 6000 to 10,000 cubic feet per hour.
Apply to Mr. J. H. SILCOX, Manager, Gas-Works, Pembroke Dock, SOUTH WALES.

FOR SALE.—A Single-Lift Gasholder, 60 ft. by 22 ft., with cast-iron Columns and wrought-iron Lattice Girders complete, in capital condition. Can now be seen in action.
Further particulars forwarded upon application to CHAS. BROADBERRY, Manager, Gas-Works, WALTHAM CROSS, N.

FOR SALE—An Annular Condenser, Tower Scrubber, Station-Meter, Beale's Exhauster, two Boilers, some Hydraulic Mains and Retorts, and some Slide-Valves.
Apply at the Gas-Works, MAIDSTONE.

FOR SALE.—Two Dry Lime Purifiers, 7 ft. 6 in. by 4 ft. 6 in. by 3 ft. 2 in. deep. Taken out to make room for larger ones.
Apply to the MANAGER, Gaslight Company, Innerleithen, N.B.

FOR SALE.—A 1-horse power "Otto" Silent Gas-Engine.
Apply to GEORGE WALLER AND CO., Holland Street, Southwark, S.E.

FOR SALE.—Gasholder, 32 ft. by 14 ft., including all Connections.
For particulars, apply to HARRY WIMHURST, Manager, Gas-Works, SLEAFORD.

THE Gravesend and Milton Gas Com- pany have FOR SALE, Four 12 ft. square PURIFIERS, 4 ft. deep, with 12-in. Connections and eighteen 12-in. Donkin's VALVES, together with Lifting Apparatus, all in fair condition, and can be taken possession of immediately; also one 10-in. GOVERNOR, by A. Wright and Co., Westminster. One SCRUBBER, 26 ft. high, 8 ft. diameter.
For further particulars apply to the undersigned.
S. SOWOOD, Manager.

EXHAUSTER FOR SALE.

THE Perth Gas Commissioners have for Sale a WHIMSTER'S PATENT GAS EXHAUSTING AND WASHING MACHINE—15,000 cubic feet per hour—taken out to make room for a larger one. It is in perfect order, and will be sold cheap.
For particulars, apply to WM. MACLIESH, City Clerk, PERTH.

THE Gloucester Gas Company have the undermentioned APPARATUS for Sale:—
About 150 feet of D-shape Wrought-Iron Hydraulic Main, size 19 in. by 19 in. Also about 38 ft. of D-shaped Wrought-Iron Hydraulic Main, size 20 in. by 20 in. Annular Condenser, consisting of six Vertical Pipes, 24 in. diameter, 19 ft. high, with three 12-in. Slide-Valves and 12-in. Connections.
Exhauster (Jones) to pass about 15,000 feet per hour.
Two Vertical Steam-Engines, each about 6-horse power, with Pulleys, and Shafting used for driving the above.
Boiler 14 ft. 6 in. by 3 ft. 6 in., with Centre Tube, and four Galloway Patent Tubes.
Two 12-in. four-way faced Valves, by Cockey.
For further information, &c., apply to the undersigned,
R. MORLAND, Engineer.

GAS PLANT FOR SALE.

THE Sheffield United Gaslight Company have the undermentioned GAS APPARATUS, in good condition, FOR SALE, at their Neepsend Gas-Works:—
Two Jones' Exhausters to pass 80,000 cubic feet per hour.
Three " " 40,000 " "
Three Dry Faced Bye-pass Valves (Newton Chambers' make).
Offers for the above to be sent in addressed to the undersigned.
THOS. ROBERTS, Manager.
Gas Office, Sheffield, May 30, 1881.

LUDLOW UNION GAS COMPANY.

THE Ludlow Union Gas Company is prepared to receive TENDERS for LOAN of £600 at 4 per cent. per annum interest, redeemable at the end of Seven years. The money is required at once for the purpose of paying off existing debentures.
The Company is unlimited.
Apply to Mr. MONTFORD, Secretary, Ludlow Union Gas Company, Ludlow, SALOP.

WEST BROMWICH.

TO TAR DISTILLERS AND OTHERS.

THE Gas Committee of the West Brom- wich Improvement Commissioners are prepared to receive TENDERS for the Purchase of the Surplus GAS TAR (say 750 tons of 200 gallons) for One or more years from July 1, 1881.
Sealed tenders, stating price per ton or lot of 200 gallons, loaded into boats only, and addressed to me and endorsed "Tender for Gas Tar," must be delivered here by Twelve o'clock noon, on Friday, the 15th of July inst.
The Committee do not bind themselves to accept the highest or any tender.
CHAS. H. BAYLEY,
Clerk to the said Commissioners.
Town Hall, West Bromwich, July 1, 1881.

BOROUGH OF NEWBURY—GAS DEPARTMENT.

TO COLLIERY PROPRIETORS AND COAL MERCHANTS.

THE Gas Committee of the Corporation of the above Borough are prepared to receive TENDERS for the Supply of 1500 Tons of GAS COAL, the supply to commence from the 1st of October next, in such monthly quantities as shall be required by the Manager.
The Coals to be delivered, carriage paid, on the Corporation siding at their New Gas-Works, Greenham, Newbury.
Persons tendering are requested to specify the colliery from which they propose to take their supply, accompanied where practicable with a working analysis.
Tenders to be marked "Tender for Gas Coal," and are to be sent in not later than Thursday, July 7, 1881.
The Gas Committee do not bind themselves to accept the lowest or any tender.
By order,
H. B. GODWIN, Town Clerk.
Northbrook Street, Newbury.

TO GAS ENGINEERS AND MANAGERS.

I Have pleasure in intimating my Re- MOVAL to New and more Commodious Premises, situated at 11, Bothwell Street (adjoining *Central* Railway Station) where I hope to receive a continuance of your favours.
D. M. NELSON, Contracting Engineer.
Depôt for Gas and Water Works Apparatus and Fittings,
11, Bothwell Street, Glasgow, June 4, 1881.

GAS EXHIBITION AT ABERDEEN.

AN Exhibition of Appliances for Light- ing, Cooking, Heating, and the production of Motive Power by Gas or Oil will be held in Marischal College Buildings, Aberdeen, under the auspices of the Aberdeen Philosophical Society, from Sept. 19, to Oct. 1 inclusive.
The College Quadrangle will be available for the Electric Light as adapted to public illumination, and the Exhibition Halls and Entrance Halls for indoor illumination.
Table and floor space, with the requisite Fittings, and a sufficient supply of Gas, will be provided free of cost to the Exhibitors.
Applicants for space will please communicate with Mr. A. D. Milne, Secretary, Aberdeen, describing the particular Appliances or Apparatus to be exhibited, and the superficial yards of Space required. Sufficient time will be allowed for fitting up and removing.
As about one-half of the space is suitable only for the simple exhibition by daylight of Appliances not requiring to be supplied with Gas, or to be shown in actual operation, intending exhibitors will please state how much Space they wish for such Appliances, and how much for Appliances at Work.
ALEX. D. MILNE, Secretary.
Aberdeen, June 28, 1881.

COAL CONTRACT.

THE Directors of the Newmarket Gas- light and Coke Company are prepared to receive TENDERS for the Supply of 2000 Tons Best Screened GAS COAL, to be delivered as required during the year from June 30, 1881, to June 30, 1882.
Tenders, stating price per ton delivered free at the Newmarket Railway Station, to be sent to the undersigned on or before the 11th of July next.
The Directors do not bind themselves to accept the lowest or any tender.
THOMAS WILKINSON, Manager.
Gas-Works, Newmarket, Suffolk, June 13, 1881.

CORPORATION OF SOUTHPORT—GAS DEPARTMENT.

THE Gas Committee invite Tenders for a Supply of CANNEL and COAL required at the Gas-Works.
For conditions of contract and form of tender—which form only must be used—application to be made to Mr. J. Booth, Gas Manager.
Tenders must be forwarded to me not later than Thursday, July 21, 1881, endorsed "Tender for Coal."
J. H. ELLIS, Town Clerk.
Southport, July 1, 1881.

TO TAR DISTILLERS.

THE Directors of the Wakefield Gas- light Company are prepared to receive TENDERS for the Purchase of the Surplus TAR made at their Works for One, Two, or Three years commencing July 1 inst. Approximate quantity 900 tons.
Sealed tenders, endorsed "Tar Tender," to be sent in not later than July 9 next.
By order,
JOHN W. WHITAKER, Manager and Secretary.
Gas Office, June 27, 1881.

LIGHTING BY GAS VALLETTA, FLORIANA, MARSA, SENGLEA, COSPICUA, AND VITTORIOSA.

Office of the Auditor-General and Director of Contracts, Valletta, June 10, 1881.

SEALED TENDERS will be received at this Office, until Noon of Monday, July 11, 1881, for LIGHTING BY GAS the Streets of Valletta, Floriana, Marsa, Senglea, Cospicua, and Vittoriosa, for a period of 15 years, to date from the 15th of May, 1882; or, for lighting, for the same period, Valletta, Floriana, Senglea, Cospicua, and Vittoriosa by Gas, and the Great Harbour by Electric light.
Tenders to be on the established printed form, supplied by this Office.
The conditions of the contract and further particulars will be made known on application to this Office, or to that of the Crown Agents for the Colonies, Downing Street London.
Each tender is to be accompanied with a deposit of £200, which sum is to be temporarily lodged with the Receiver-General to be dealt with as stated hereunder; and no notice will be taken of any tender, unless the due fulfilment of this condition be found endorsed thereon by that Officer.
The deposit thus made shall be forfeited in favour of Government, should the party tendering, or the surety, fail to appear for the stipulation of the requisite contract, in the event of the tender being accepted, within three days from the day of the notice given to him to that effect.
The deposits of the unsuccessful tenderers shall be returned to them immediately after notice will have been given to the party whose tender will have been accepted.
Any notarial fees will have to be paid by the Contractor.
The undersigned retains the power of accepting or rejecting all or any of the tenders received.
F. P. HOARE,
Auditor-General and Director of Contracts.

OXIDE OF IRON,

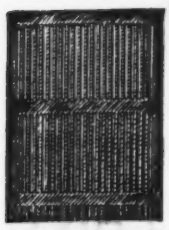
Suitable for Gas Purification Purposes.

Gas Companies can be supplied with the best quality of Natural Irish Oxide, shipped direct from the extensive Estates in Donegal of the Earl of Leitrim and Wybrant Olpnert, Esq., D.L.

For Terms, References, and Particulars, apply to

JOHN BEATTIE, Manager, FALCARRAGH, Co. DONEGAL.

R. DEMPSTER AND SONS'



WOOD SIEVES FOR PURIFIERS,

WITH TAPER OR PARALLEL BARS,

MADE BY SPECIAL MACHINERY.

SCRUBBERS FILLED WITH BOARDS,

On our approved principle, for the extraction of Ammonia.

Prices on application. References to First-Class Engineers.

ROSE MOUNT IRON-WORKS,

ELLAND, Near HALIFAX.

London Office: 106, CANNON STREET, E.C.

JUST PUBLISHED.

AN ANALYSIS OF THE

METROPOLITAN GAS COMPANIES' ACCOUNTS

For 1880,

In continuation of the previous Years from 1869;

ALSO OF THIRTEEN OF THE SUBURBAN GAS COMPANIES' ACCOUNTS FOR 1880.

COMPILED AND ARRANGED BY JOHN FIELD,

PRICE 10s. 6d.

TO BE HAD OF

WALTER KING, "Journal of Gas Lighting," 11, BOLT COURT, FLEET ST., E.C.

OR FROM

EDEN FISHER and Co., Stationers and Engravers, 50, Lombard Street, E.C.

JAMES MILNE & SON,

GAS ENGINEERS,

Gas-Meter, Gas Apparatus, and Gas-Fittings Manufacturers,

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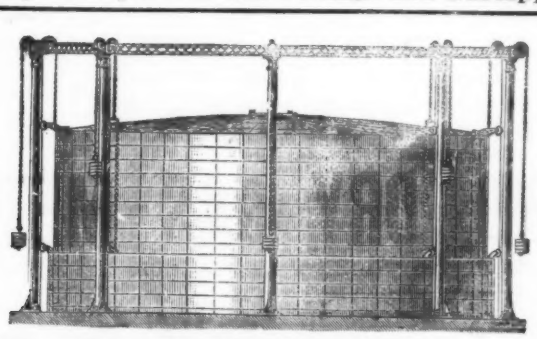

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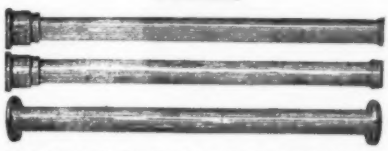

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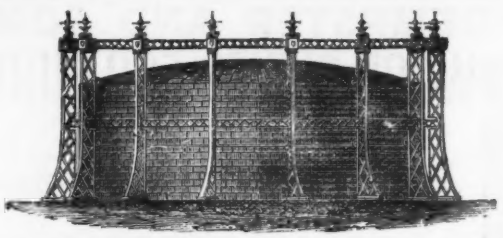

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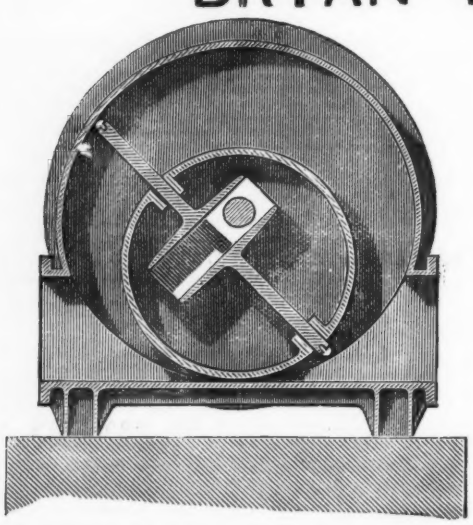

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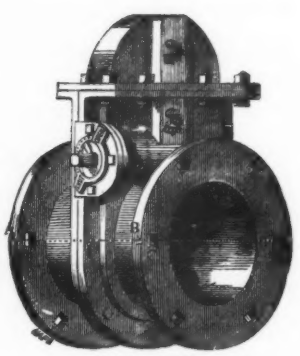

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Total of Fast Tests . .	47·2	6·9	33·6	62·3	53·7
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	72·5	124·3	76·7	93·7	92·2

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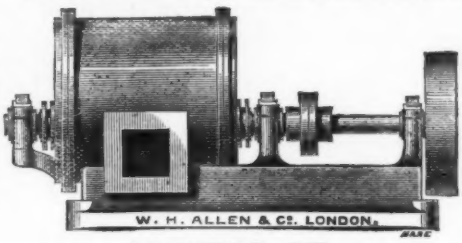

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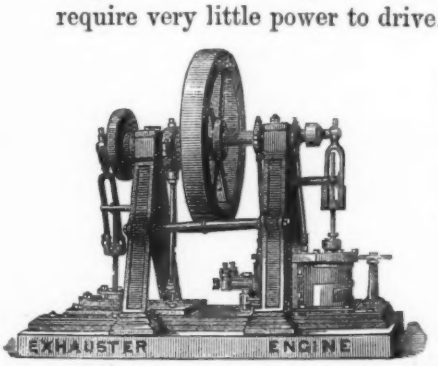

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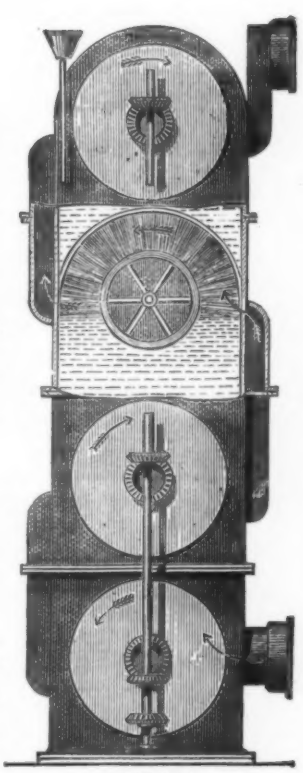

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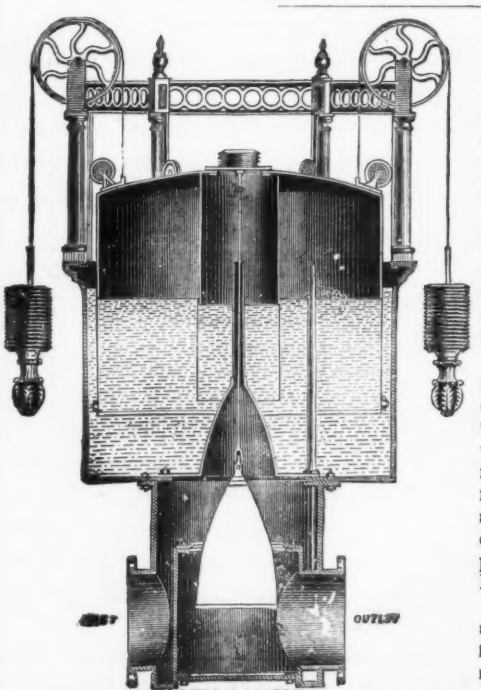
Which is designed to give an uniform pressure at the Outlet to the Main at all draughts up to the full quantities which the Governors are made to control, such outlet pressure being less than the initial pressure.



VERTICAL SECTION

The uniformity of pressure is obtained by introducing a compensating chamber into the Bell or Holder of the Governor, which compensator is of the same area as the valve, both of which are operated on by the initial pressure, thereby placing the valve in equilibrium, no matter what the initial pressure may be. The action on the Bell is by the Gas passing along a pipe from the outlet, and the pressure is regulated by weights in connexion with the Bell as required.

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